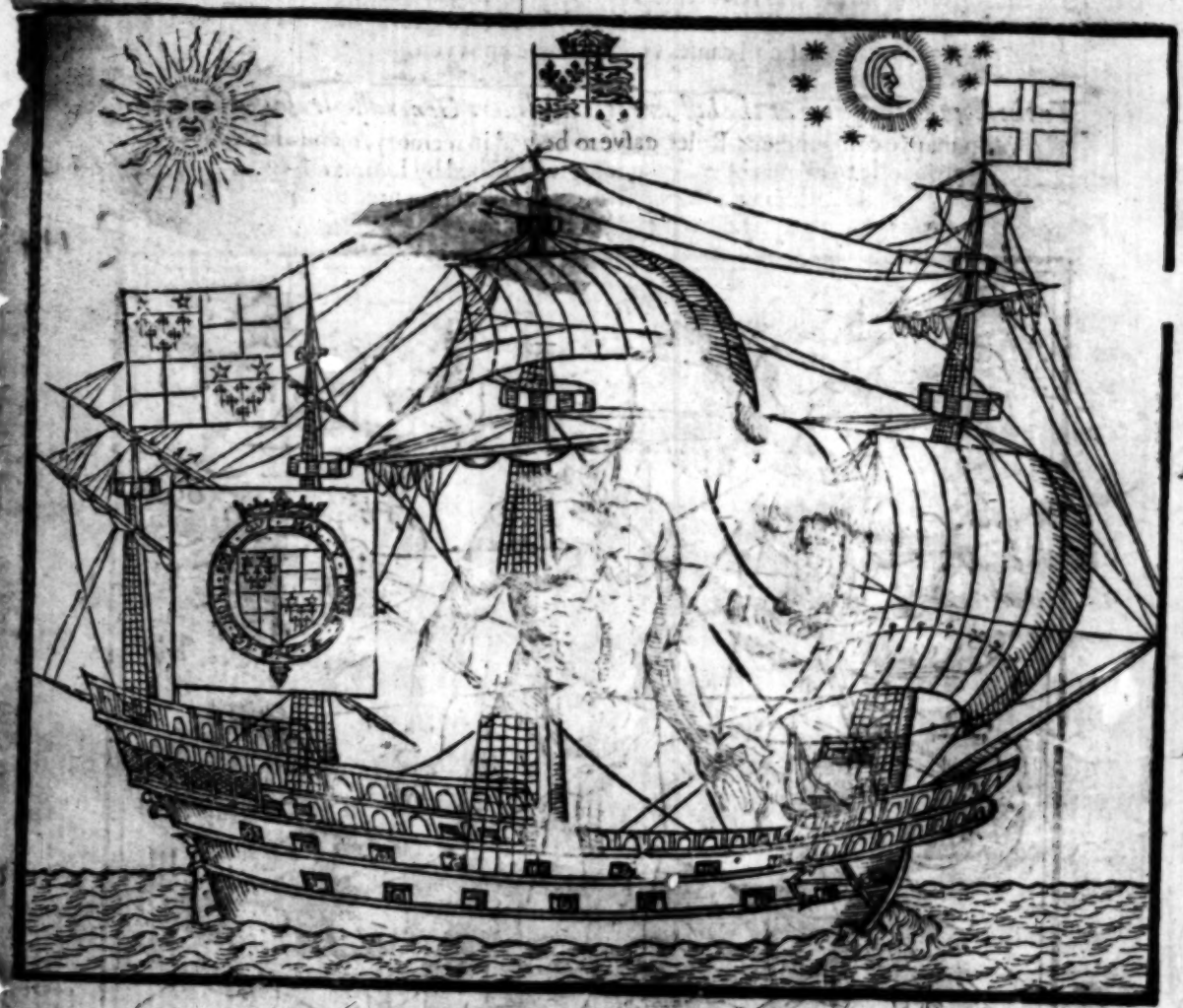
A Prognostication euerlastinge of right good effecte, fruitfully augmented by the auctour, containing plaine, perfite, pleasant, chosen rules to iudge the weather by the Sunne, Moone, Starres, Comets, Rainebow, Thunder, Cloudes, with other extraordinary tokens, not omitting the Aspects of Planets, vvith a briefe iudgement for euer, of Plenty, Lacke, Sickenes, Dearth, VVarres &c. opening also many naturall causes vvorthy to be knowen.

To these and other now at the last, are ioyned diuers Generall, pleasaunt Tables, vvith manye compendious Rules, easye to be had in memory, manifolde vvayes profitable to al men of vnderstanding. Published by Leonard Digges Gentleman. Lately corrected and augmented by Thomas Digges [illegible]

S 114
R 114

Imprinted at London by Thomas Marsh. Anno 1576.



TO THE RIGHT HONORABLE SIR EDWARD Fines, Earle of Lincolne, Baron of Clinton and Saye, knighte of the noble order of the Garter, Lord high Admirall of England, Ireland and VVales, and of the Dominions and Iles thereof: of the towne of Calyce & Marches of the same. Normandy, Gascoigne & Guien. And Captaine generall of the Queenes Maiesties Seas and Navie Royall.

RIght honourable, hauing of long time sundry wayes fond your Lordships greate fauour not only toward my father in his lifetime, but also toward his, most bountifully cõtinued sithens his death, I haue carefully thought which way I might some way yelde a testimony of a gratefull minde. And Perusinge of late a Booke of my fathers to your Lordship dedicate, by negligence or ignorãce of Correcters many wayes depraued: I determined both to amẽde the faults & with some additions to amplifie the same, briefly also to touch & discouer certain errours touching matters of Nauigation transferred into our language. And although I haue in a peculiare volume for that purpose prepared to entreate at large deliueringe new Rules & Methodes hitherto in no language published, nor to my knowledge of any forraine Nãtiõ practized, not onely in demonstration voyd of all errour, but also in practize feazible. Yet in the meane leaft farder boldnes by ignorance should encrease, to deriue vs mo errours from other nations, whereof oure Seamen haue learned to many already: I thought good at the end of this booke to note some of the most vsed & esteemed & amõg that factiõ held for Oracles, wherby in deede they haue bin and are (in all Nauigations) so misled, that were they not by sight of the coast, & soundings better directed, then by any troth in their Arte, many moe vessells should daily perish. This present token therfore of dutifull good will I shal humbly desire your lordship in good part to accept, meanig hereafter (God sparing life) to honour your Lordshippe & profit my country with matters more rare. And in the meane humbly take my leue.

At your Lordships commaundement

Tho. Digges.

To the reader.

TO auoyd (gentle Reader) the yerely care, trauayles and paines of other, with the confusions, repugnances, and manyfolde errors partly by negligēce, & oft through ignorauncē committed: I haue againe briefly set forth a Prognosticatiō general, for euer to take effect, adioyninge thereto diuers profitable collections, and many pleasaūt conclusions, easie of all willing ingenious to be perceiued. Here note (Reader) wheras the eleuate Pole and Meridian should be considered, in this worke it is perfourmed for Londō, because I wish this Meridian, situation or clime the exacte truth of things. If any yearely practises in like matters agree not with my calculations, be assured they are false, or at the leaste for other Elenations or Meridians supputated, and therfore little seruinge thy purpose. And that the late rude inuentions, and grosse deuises of some this yeare, & two yeares paste published might be of them perceiued, then fled, and to serue to some profite: I haue purposed euen now to put forth a booke named *Pantages* well seruing their turne, and so generally and most exactly all Europe, pleasaunt, profitable to the learned, and no small delight to all maner of men. An other booke is also already come to thy handes, tituled Tectonicon, a treasure vnto the Masons, Carpēters, Landmeaters, correcting their old errours wrōgfully reckened of them as infallible grounds, teachinge faithfully, sufficiently, and very briefly, the true mensuration of all maner land, timber, stone, bord, glasse. &c. And at the ende cōtayning an instrumente Geometricall appointed to their vse. Take in good worth these labours (louinge Reader) and looke shortly for the pleasaunte fruites Mathematicall euen such as haue bin promised by my freinds and partly by mee. Neither shal my desire to profite here stay: but entendeth farther to proceede, if these seeme accepted. As the good will of Printers not bad, kept the foresaid from you: so I trust the willing minde & excellency of Tho. Gemini, shal bring them shortly vnto you.

Certes my hope is while life remaineth, not to be vnfruitful to this common wealth with study and practise.

mie, and Science Mathematicall.

I Am diuersly occasioned (louinge reader) somewhat to write in the commendatiō of the Mathematicals which needed not, but onely to open the foolishe rashenes and rashe foolishnes of suche, which of late haue in wryting disprayse these goodly artes. It is an olde sayd saw, & true: *Scientia non habet inimicum nisi ignorantem.* But to auoyde tediousnes, and chiefly for the true satisfying, I referre all of that sort, which haue tasted any learning (the rest not regarded) to the first part of famous Guido Bonatus de vtilitate Astronomiæ in communi, where hee wryteth *contra illos, qui dicunt quod scientia Stellarum non potest sciri ab aliquo: contra illos, qui dixerunt, quod scientia Stellarum non est vtilis, sed potius damnosa &c. contra illos, qui cōtradicunt iudicijs Astronomiæ, & qui reprehendunt eam, nescientes dignitatem eius, eo quod non est lucratiua.* Also for breuitie I appoint all nice deuines, or (as Melanchthon termeth them) *Epicurei theologi*, to his hie commendations touching Astronomie, uttered in his Epistles to Simon Grineus, to Schonerus, & to ꝑ perozation of Cardanus 5. bookes, where he shewed how farre wyde they alledge the Scriptures against the Astronomer, which make wholy wyth the Astronomer. Melanchthon wryteth and affirmeth. *Arrogantiam esse cum summa stultitia coniūctam, venari choragium aliquod gloriæ ex insectatione artium, quæ sunt graui autoritate doctorū prudētiū receptæ*, he calleth it *manifestum insaniæ genus*, declaring *quod magis opus habent medicis, q̄ Geometris*, aduising the learned not to giue eare vnto theyr folly. *Sinamus (ait) vna cum Epicuro ineptire.* Which counsell lo, I folow. Now therefore, ye ennemies of all good doctrine, either giue an ouerthrowe & that ẅ your penne, or let famous Guido or learned Melanchthon satisfy. If neither: certes I wil shortly (God sparing life) take some paine in publishing the wōderfull vnknowen pleasaunt profites of ꝑ dispraysed high knowledges and by that meanes to enforce silence.

Vituperāt qui simpliciter ea ignorant.

Now in few for thy encouragement in these, thus I say and truly: the ingenious learned, & wel experiēced circumspect student Mathematical, receiueth daily in his witty practises more

pleasaunt ioy of minde, then al thy goods (how rich soeuer thou be) can at any time purchase. *Id tantum quod pulchrum est, quod purum est, quod diuinum est, nihil mortale sapiens, dulci ardore amplectitur. Vt multa paucis: crede mihi extingui dulce erit Mathematicarum artium labore.* Now to ende: that learned *Guido*, ꝯ excellent *Guido Bonatus*, sheweth what Astrologie or Astronomie is, ꝯ ought not (sayth he) by any meane to be reprehẽded, in that the most wyse, yea, the holy fathers haue practised that science. He proueth it one of the chiefe sciences Mathematical, by the authoritie of ꝯ best learned, ꝯ by Aristotle in his Posteriorum. Howe commeth it to passe louinge reader, seinge it is a noble science, *Et Scientia est notitia vera conclusionum, quibus propter demonstrationem firmiter assentimur*, that it is counted vayne, and of so small stregth: the secret truthes and most pleasaunte profites therein not despyred, yea vtterly dispysed and of some busy byting bodies reiected as very lies? Let no mã doubt ignorancie, the great enemie of al pure learning both wrought this. *Nam incertam vocat hanc artem vulgus, propter errores non arti, sed hominum indoctissimorũ inscitia, & temeritati imputãdos, qui citra delectum omnia effutiunt.* Thus I leaue indigestly further to trouble: fauour me as I tender the furtherãce of good learninges, profitable to a common wealth. Fare most hartely well, vnfayned good Christen reader.

Stulti negligunt & cõtemnũt: qui cõtradicit ambitiosus est, qui maledicit, fatuus.

FRom the next syde to the fift leafe, are conteyned ỳ formes of a Quadrãt, Square, Circle, Quantities, wyth a figure truly placing the said Quantities in the heauen.

From the fift to the thirteenth, ye haue the iudgement of weathers by ỳ Sunne, Moone, Starres, Comets, Rainbow, Thunder, Cloudes, with extraordinary tokens and aspectes of Planets. &c.

The 13. 14. 15. and 16 leafe, shewe the causes of such alteratiõ according to Aristotle. First of ỳ Rainebow, then Raine, Frost, Dewe, Snowe, Hayle, Windes, Earthquakes, Thunders, Lightninges, Comets, Sunne and Moone eclipsed, Quantities of the Planets and their placing, ocularly demõstrated.

The 17. the aspectes of the Moone and her signification in ỳ 12. celestiall Signes.

The 18. 19. and 20. What Signe the Moone is in & shalbe for euer, the meete time to let bloude, to purge, to bathe, to fall timber, to sowe, to plant, to grafte, cutte, geld. &c.

The 20. & 21. haue Tables for the Sonday letter, for ỳ Golden nomber or Prime, for the Epact and mouable feastes, many wayes conducing.

The 22. 23. and 24. the age of the Moone, ỳ chaunge & quarters for euer are declared, the Ebbings & Flowigs, the breake of the Day, the Sunne rising, the lẽgth of the day and night, ỳ Twylight for all the yeare.

The 25. 26. and 27. shewe exact pleasaunt wayes for the daye and night houre, wyth compositiõ of meete Instruments.

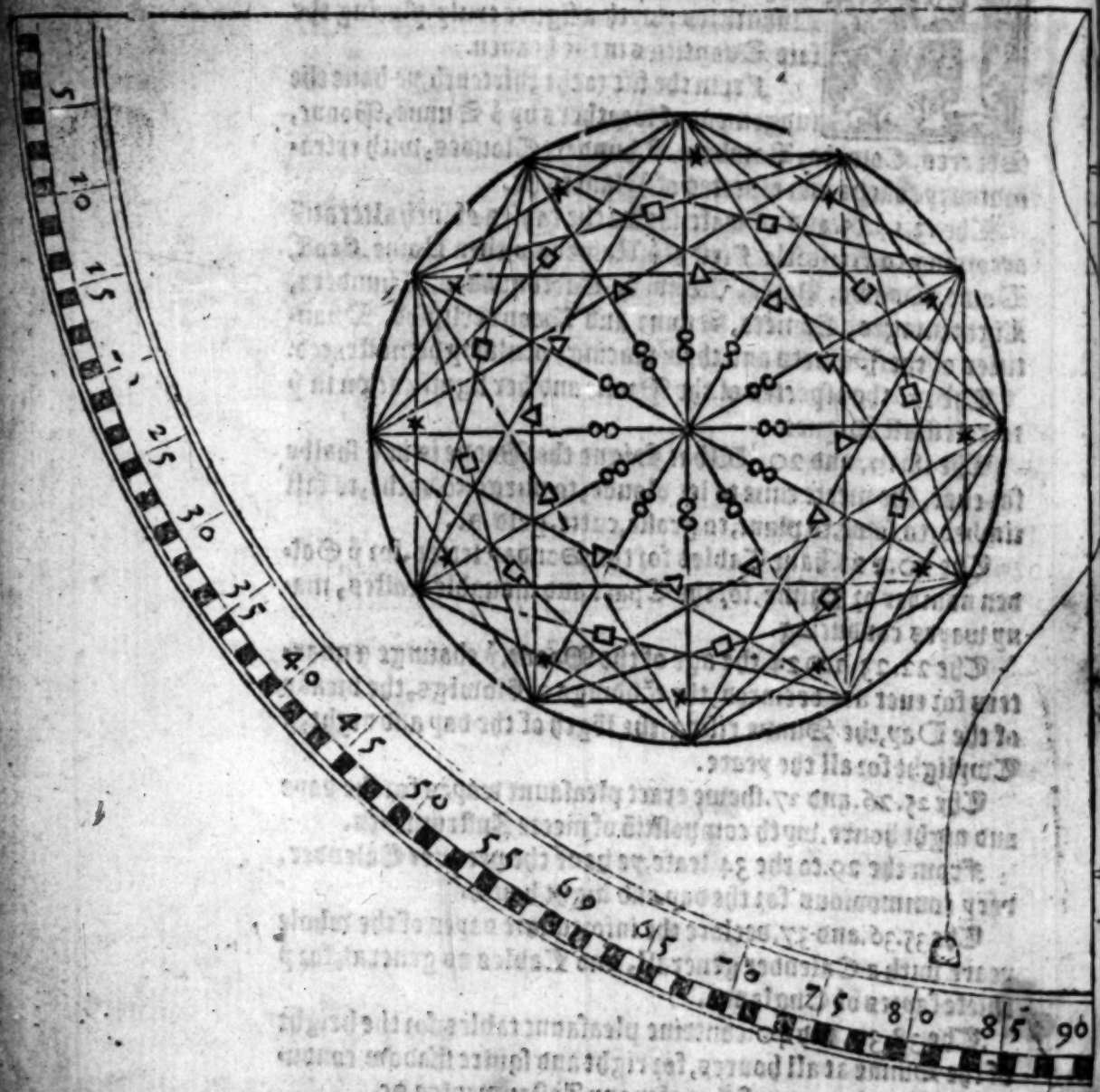
From the 29. to the 34. leafe, ye haue the peculier Calender, very commodious for the day and night houre.

The 35. 36. and 37. declare the infortunate dayes of the whole yeare with a Calender generall, and Tables as general, for ỳ chiefe layres of Englande.

The 38. 39. and 40. contrine pleasaunt tables for the height of the Sunne at all houres, for right and squire shadow, conducing also to the composition of many Instrumentes &c.

The 40. and 41. leafe, Collections easie to be had in memory.

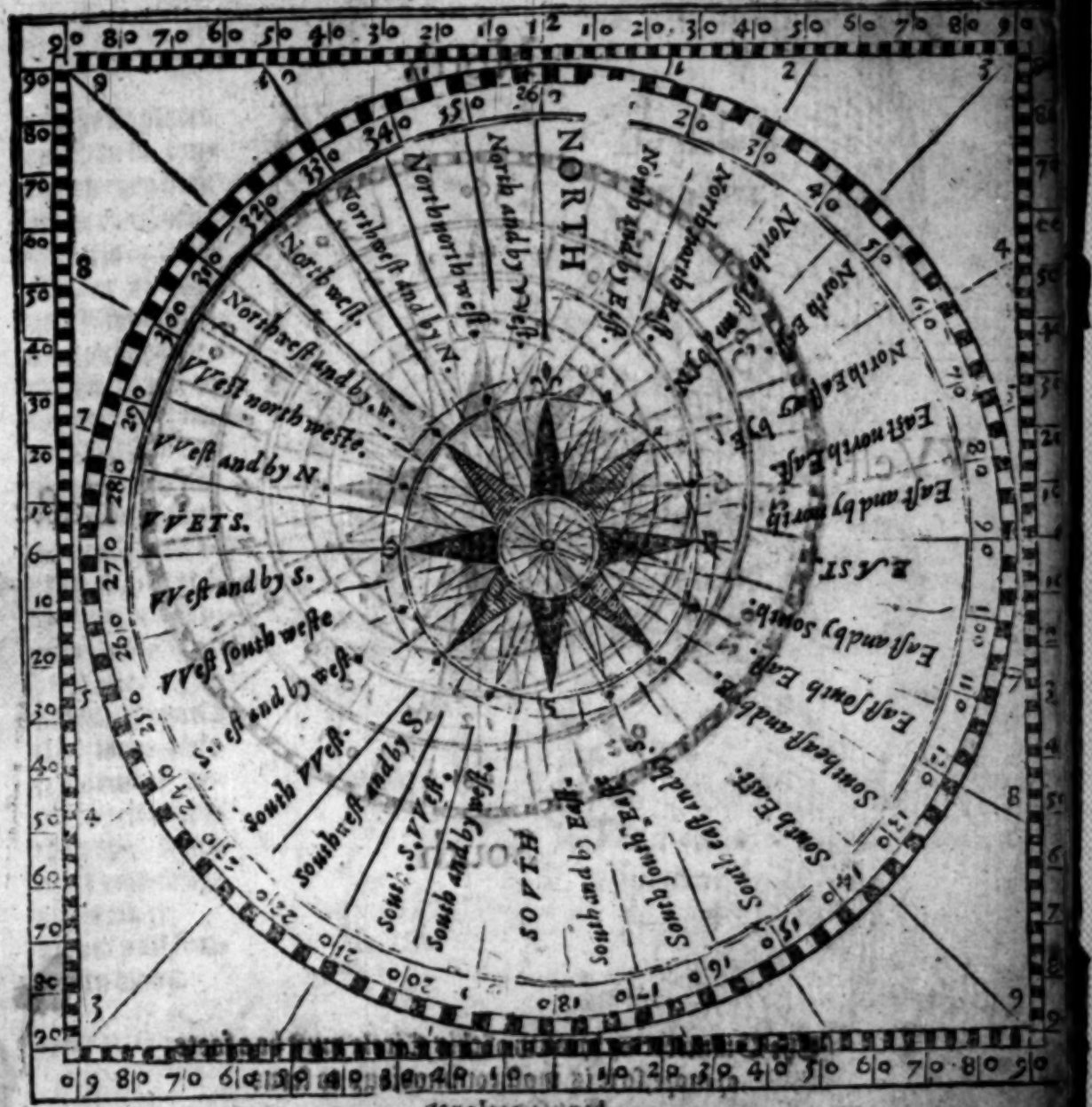
This Quadrant is appointed here to get exactely the length of Staffe and Squire shadowe, howe vnleuell soeuer the ground be, as I haue sufficiently instructed in the eight and thirtie leafe.



If ye list not to make a Quadrant, ye may vse this very well adding a plumbmet and line, with sightes or otherwise.

This

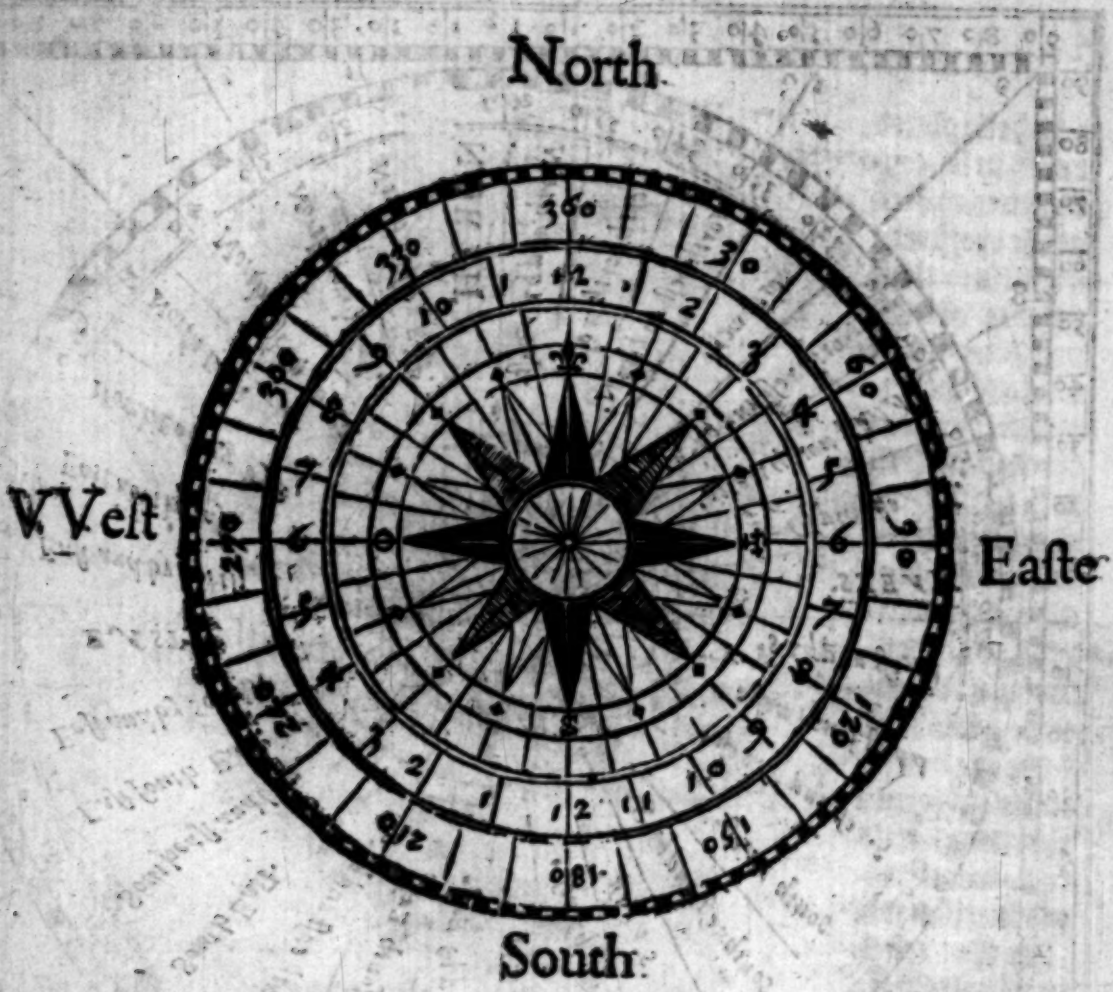
This instrumēt must be made in a plaine fine metall plate, a foote or more square. Then it is pleasaunt for the houre of the day and night either to be fixed about your house, or moueable if ye list, by a needle to be placed vvhere and vvhen ye vvil. The 26. leafe shevvth the making.



The good vse of this Instrument: the mariner may long serueth marueplously his turne.

Or

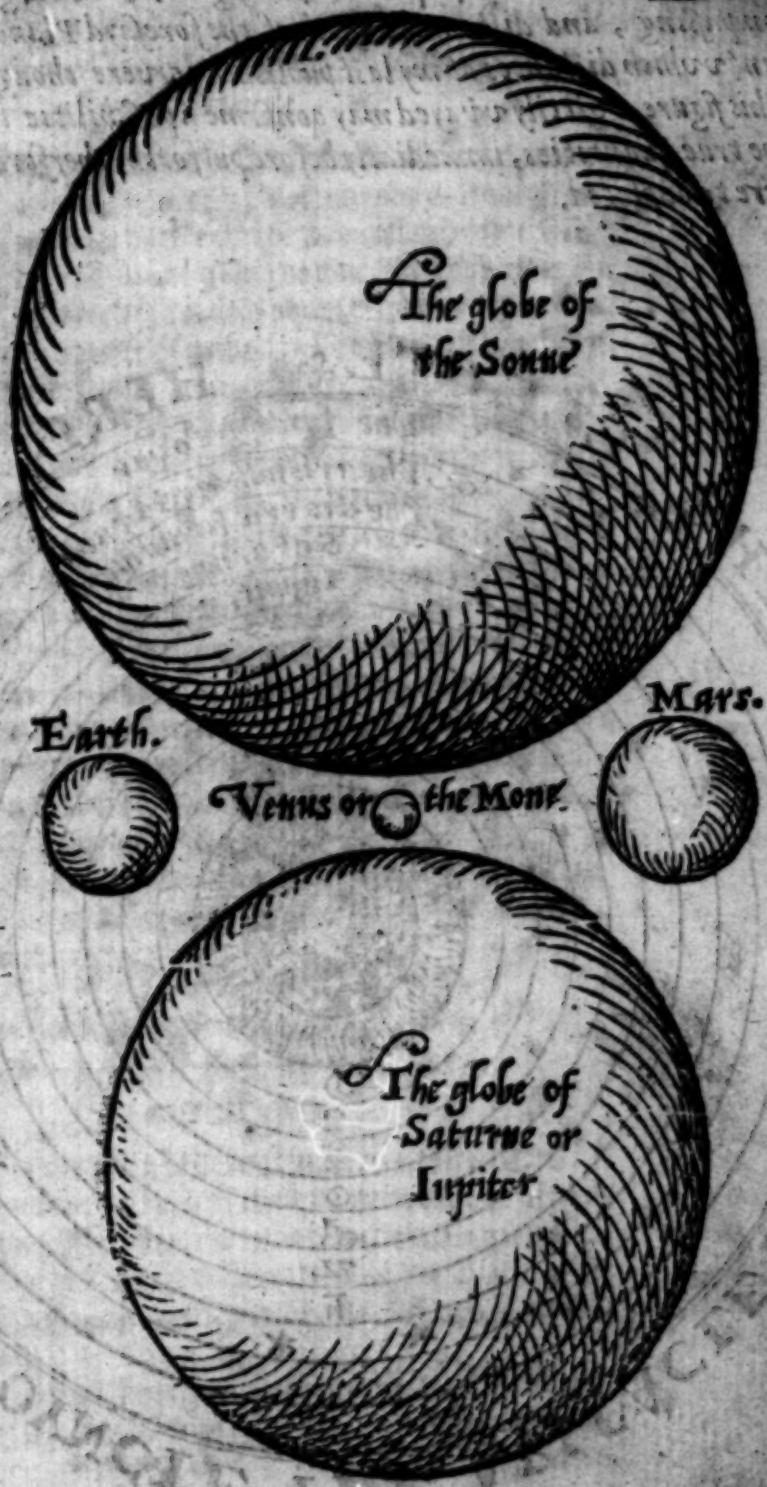
Or thus without the Square, this Circle will serue well your purpose, being exactly made, and truly placed.



The Diameter or breadth of this Circle must be a foote or more, so it is most commodious to serue his vse declared.

Haue

I haue placed ready to be conceiued euen here at the eye, ꝑ true quãtitis or magnitudes of ꝑ seuen Planets, ꝑ one to the other, and euery one to the earth: which may satisfye thẽ that scorned my last publishing, where I declared ꝑ Globe of ꝑ Sunne, to conteine ꝑ Globe of ꝑ Moone. 7000 times. I would they were able to conceiue demõstratiõs maker then the truth more euidently appearinge, would pull scornings away.



I thought it meete also to put here this figure, shewing the placinge. compaſsing, and distaunces of ech of the foresayd Planets in the heauen (which distances at my last publishing were thought impoſsible. This figure (wittily wayed may confirme a poſsibilitie to agree vnto the true quantities, immediatly before put forth, therfore not omitted here to be placed.

weather by the Sunne rising or going dovvne.

THe Sunne in the Horizon or risinge, cleare & bright, sheweth a pleasaunt day, but thinly ouercasse with a cloude, betokeneth foule weather. Also at ꝑ going downe, the body diuersly coloured or redde, & about dispersed wyth like cloudes the beames red, & of length, pronostice greate wyndes, the nexte day from that part. Blacknes in the Sunne or Moone, betokeneth water: redde signifyeth wynde. De obseruandis meteoris.

The Element redde in the euening the next day fayre: but in the morning redde, winde and raine. Also the Sunne beames spotted, greene, pale, or blacke, gathered to a cloude, signifyeth rayne. Further the Sunne at the setting plainly seene without any cloude, declareth a fayre night to ensue.

Here note, Ptolome willeth vs diligently to obserue ꝑ circle or circles about the Sunne. If it be cleare, and that circle of no continuance, behold faire weather. If many of them, winde.

Winds more vehement are signifyed, if ꝑ the circles be somwhat redde, here and there broken: but these obscured thick and blacke, looke for cold wynde and snow.

What is spoken of the Sunne touching the circles, the same, is ment of the Moone. Note here that greater wynds chaunce in the day then in the night. *Note.*

☞ *Howe vveather is declared by the colour of the Moone, and the nature of the Signe vvherin she is.*

IF the Moone in the third of her chaunge, yea three dayes before the full, or in the middes of the quarter be found of pure light nothing compassing her, the ende direct vp, she promiseth fayre weather, but bent to red coloure, prouoketh winde. The Moone pale or somwhat inclined to blacke, obscure or thicke, threatneth rayne. *Luna rubens ventat pallens pluit, Alba serenat.*

Also by the nature of the signe, weather may be iudged thus, according to Stoflerinus, Monteregius, Leupoldus & famous

Guido Bonatus, w other wel trauayled in ỳ mutacions of ayre.

♈ ♌ ♐ hotte.

♉ ♍ ♑ earthie.

♊ ♎ ♒ wyndie.

♋ ♏ ♓ watrie.

Consider the nature of the signe where the Moone is, at the chaunge, quarter and full. If she be in hote and dry signes as Aries, Leo, Sagitarius, in witer a good token of fayre weather. In sommer a great signification of immoderate heate: If in earthy cold and dry signes, as Taurus, Virgo, & Capricornus, in winter iudge cold, frost, snowe to ensue, but in sommer temperate weather. In Aerie and windy signes as Gemini, Libra and Aquarius, much winde. If in watry, colde and moyste signe, as Cancer, Scorpio and Pisces, in Winter wet weather. In Sommer a pleasaunt temperature.

ALso the Sunne in Aquary, the Moone at the chaunge there or in Sagittary, or at ỳ full in Leo betokeneth raigne. The Sunne in Pisces or Aries, the Moone in Virgo, Libra, or Sagittary, signifyeth raine, especially in watry dwellinges. The Moone in Aquarius or Pisces, loke for chaunge of weather, thē chiefly she troubleth the ayre. The Moone also at the chaunge or rather at the ful, in Aries, Libra, Scorpius or Pisces, tempestreous weather followeth. The Sunne in Aquarie or Aries, Libra or Scorpio, but chiefly in Leone, the Moone then at the full, and that after raine or mistinges, loke for lightening thunder &c. To conclude ehe Moone in Cancer, Leo, Capricornus, or Aquarius, ayded with any aspect, but chiefly wyth the opposition or quadrat of Venus, rayne followeth.

☞ *The iudgement of weather by Starres.*

Cum maiora apparent, tum enim Humore medius crassescit aer.

BEhold the starres whose magnitude you know best. If they appeare of much lighte, in bignes greate, more blasing then they are commonly, it betokeneth great wynd or moysture in ỳ part where they shewe, in wynter cold and frost. When starres seeme to runne in the Element it sheweth wynde. Affyrme also alteration of weather, if they be fewe in nomber, cloudye, and of litle light. Further when dimme starres appeare with long fiery tayles, iudge wynds and great drought, the more in nomber, the greater effect. Whē Starres in the night (as it is said)

shoote

shoote or seeme to fall, it argueth wynde in ꝑ part. If in diuers places inordinate wynds, if in al places, then pronounce winds, thunder, lightenings, yea weather most tempestuous.

❧ *The signification of Comets.*

COmets signify corruption of the ayre. They are signes of Earthquakes, of warres, chaungyng of kingdomes, great dearth of Corne, yea a common death of man and beast.

De cometarũ prodigijs, lege Cardanũ lib. 4 Fol. 83 & Antoniũ Mizaldũ de Cometographia.

Pontanus sic scribens: Venturum quoque certa dabunt tibi signa Cometa: Illi etiam belli motus, feraq, arma minantur, Magnorũ & clades populorum, & funera regum, aquarum significat penuriam.

Howw by the Clowdes chaunge of weather is perceyued.

IF thicke cloudes resembling flockes, or rather great heapes of woll be gathered in many places, they shewe raigne. Also when grosse thicke darke cloudes right ouer the North part, or somewhat declyning to the West are close wyth the Earth, immediatly followeth raine. If they appeare lyke hilles some deale, from ꝑ earth a good token of weather ouerpassed. Black cloudes, signifie rayne. White clouds appearing in Winter at the Horizon two or three dayes together, prognosticate colde and snow.

Of the Rainboww and his effect, touching alteration of ayre.

IF in the morning the Rainbowe appeare, it signifyeth moysture, vnlesse great drought of ayre worke the contrary. If in the euening it shewe it selfe, fayre weather ensueth, so that aboundant moyst ayre take not away the effect.

Arcus nisi sole aduerso non fiunt.

Or thus.

THe Rainebow appearing, if it be fayre, it betokeneth foule weather, if foule, looke for fayre weather. The greener the more raine, redder wynde.

Non apparet nisi cum Vapores rarificantur vel inspissantur.

Of thunders what they signifie.

Signum futurorũ bellorũ.

THunders in the morning, signifie wind. Aboue noone raine. In the euening great tempest. Some write (their ground I see not) that Sondayes thunder, should bring the death of learned men, Judges and others.

Mondayes thunder the death of women.

Tuesdayes thunder plenty of graine.

Wednesdayes thunder, the death of harlots & other bloudshed.

Thursdayes thunder, plenty of sheepe and corne.

Frydayes thunder, the slaughter of a great man, and other horrible murders.

Saturdayes thunder, a generall pestilent plague and great dearth.

Hovv vveather is knovven after the chaunge of euery Moone by the Prime daye.

SOnday Prime, dry weather. Mõday Prime moyst weather. Tuesday Prime, colde and windy. Wednesday Prime, wonderfull. Thurseday Prime, fayre and cleare. Friday Prime, mixt weather. Saturday Prime, moyst weather.

Novv ensueth extraordinarie tokens for the knovvledge of vveather.

Common tokens of vveather, meete for all maner of vvits.

SOme haue obserued euil weather to follow, whan as watry foules leaue the Sea, desiring lãd: the foules of the land flying high: ẏ crying of foules about waters making a great noyse ẇ their wings: Also ẏ Seas swellĩg ẇ vnaccustomed waues: if beastes eate gredely: if they lick theyr hooues: if they sodeinly moue here & there, making a noyse, breathing vp to the ayre with open nosthrels: raine followeth. And the busy heauing of Moles, the appearing or comming out of wormes. Hennes resorting to the pearch or roust couered with dust, declare rayne. The ample working of the Spinner in the ayre: the Ant busied with her egges: the Bees in fayre weather not farre wãdring, the continual prating of the Crow, chiefly twyse or thrise quick calling, shew tẽpest. When the Crow or Rauen gapeth against the Sũne in Sõmer, heate followeth. If they busie themselues

in

in proining or washing, & that in winter, loke for raine. The vncustomed noyse of poultry, the noyse of swine, of Peacockes, declare the same. The Swalow flying and beating the water, the chirping of the Sparowe in the morning, signifie raine. Raine sodēly dried vp, Wody couerings straiter thē of custome. Bels heard further then cōmonly, the wallowing of dogges, the alteraciō of Cocke crowīg, al declare rainy weather. I leaue these wāting the good ground of the rest. If the learned be desirefull of the two aforesaid, let them read graue Virgil, Primo Georgicorum. At Bor &c.

There be a multitude of other not extraordinary, but of the best knowē causes, many for breuity here omitted, the most part not mētioned, because they passe the capacitie of the cōmon sort: vpon all the which the Astronomer, doth well & learnedly conclude I doubte not, there be also sometime vnknowen matters mitigatinge the aforesayde, or prouokinge tempest vnloked for, which neither experience, ne learning hath stablished. How vnkinde (these considered) yea how farre from worthy thankes geuing are they which in generall headdely do blame, checking bitterly the Astrologer, wt these Iudiciarie matters, the least part amonge a nomber of his most certaine doings whā things fortune contrary to expectacion. Understād gentle Reader, the cōsent of a multitude famously learned is their buckeler, euē in these matters iudiciarie. Who haue wayd a lōg time prudētly, the great strength, the vehement force, & marueylous natures, of all erraticall & celestiall constellations, wt their Angles, Radiations, Aspectes, Affections, Stations, Progressions, Defections, Dispositions, Applications, Preuentions, Refrenatiōs, Contrarieties, Abscissions, Coniunctions, Quadratures, and Oppositions, &c. Therfore extreame folly, yea more then madnes doth he vteer, which imbraydeth or backbiteth these knowledges, not remembring the great, and manifold benefites had through them, and that with most certainty in al other doings.

What Meteoroscoper, yea who learned in matters Astronomical, noteth not the great effects at the rysing of the starre called the little Dog. Truly the cōsent of the best learned do agre of his force, yea Plini, in his historie of nature affirmeth, the Seas thē most fierce, Wines to flow in cellers, stāding waters

Canis minoris efficatia.

Oriōis, Arcturi, Coronæ, Capræ, sucularum effectus. ☌ □ & ☍ ♄ cum ☉ aut ☽.

to moue dogs inclined to madnes, then most woode. Farther these constellations Orion, Acturus, Corona, rysinge prouoke tempesteous weather. The kid and Goate, windes, Hyades, or Succule rayne. What Meteorologer cōsenteth not to the great alteration and mutacion of ayre, at the coniunction, oppositiō or quadrate aspect of Saturne wyth eyther two lightes. Who is ignoraunt yea meanly traueyled in Astronomie, that Iupiter w̄ Mercurie or wyth the Sunne inforceth rage of wynds. What is he that perceyueth not the fearefull thunders, lightenings & raynes, at ẏ meeting of Mars & Venus, or Iupiter & Mars. &c.

☌ ♃ □ & ☍ cum ♀ aut cum ☉ &c.

Leaue for shame to impugne these iudicials strōgly authorised. He that any other part carpeth maye seeme more then mad. All truth, all experience, a multitude of infallible grounded rules are against him. *Certum est omnibus que notum, quòd cœli motus, signorum ortus, & occasus, planetarum aspectus, & cōiunctiones, luminarium Eclipsis, &c, certissimam, determinatam, ac infallibilem habent causam. Quis iam sanæ mentis negabit eorum effectus sæpe innotescere, vtpote bella, fames, grandines, aëris perturbationes, elemenaorum commotiones, terræ motus, & similia? Positis causis naturalibus, & non impeditis, sequitur effectus.*

The learned that listeth ingeniously to prognosticate of weather will not onely discretely way all before written, but consider also with them the aspectes of the Planets following, and their Combustion in the xii. signes, wyth the cōiunction of fixed starres, mansions of the Moone, Ascendent Climes. &c. Also the times or quarters of the yeare must be noted diligently (as ensueth) and iudgement pronounced.

Of the yeare deuided into 4. quarters.

♈ ♉ ♊ Powver ouer the breste. ♋ ♌ ♍.

The Spring time is hot and moyste, and continueth so longe as the Sunne is in Aries, Taurus, Gemini, which is from the tenth of March vnto the twelfth of June. The Sommer is hot and dry compted from the beginning of Cancer to the ende of Virgo, ẏ is frō the twelfth of June to the 14. of September.

♎ ♏ ♐ ♑ ♒ ♓ Powver ouer al flumes.

Harnest is cold and dry: that is from ẏ beginninge of Libra vnto the end of Sagittary, counted from the xiiii. day of September to the xii i. of December. Winter is cold and moyste, couten

ted from the beginning of Capricornus, to the ende of Pisces, ℔ is from the twelfth of December, to the tenth of March.

Here followe the aspectes of the Planets for the better iudgement of weather.

BEfore I declare of Planets & the signification of aspects, it behoueth briefly to ope what I call Planets and what aspects, and how they are Characters & figured. Understand there be seuen moueable starres, pleasant to the sight called Planets, the highest Saturn ♄, the Iupiter ♃, Mars ♂, Sunne ☉, Uenus ♀, Mercury ☿ and the Moone ☽, next to the earth.

Now when I desire to expresse Saturne, I write this figure ♄, for Iupiter this ♃, or Mars thus ♂, Thus of ℔ other as their Characters declare. All Radiations or aspectes are expressed as followe: A Coniunction thus figured ☌, and it is when another Planet is ioyned with the Sunne or Moone, or others amonge themselues, within one degree or lesse.

The Sextile Aspect or Radiations, is thus expressed ⚹, and it is within 60. degrees ℔ one from the other. The Quadrate aspect thus □, 90. degrees distant. The Trine thus △, seperated 120. degrees. The Oppolition thus ☍, 180. degrees ℔ one distante from the other.

Loe here, follow in order, the characters of the Planets, and Signes also.

☌ ⚹ □ △ ☍

Coniunction, Sextile, Quadrate, Trine, Oppositon,

♄ ♃ ♂ ☉ ♀ ☿ ☽

Saturne, Iupiter, Mars, Sunne, Venus, Mercury, Moone,

♈ ♉ ♊ ♋ ♌ ♍

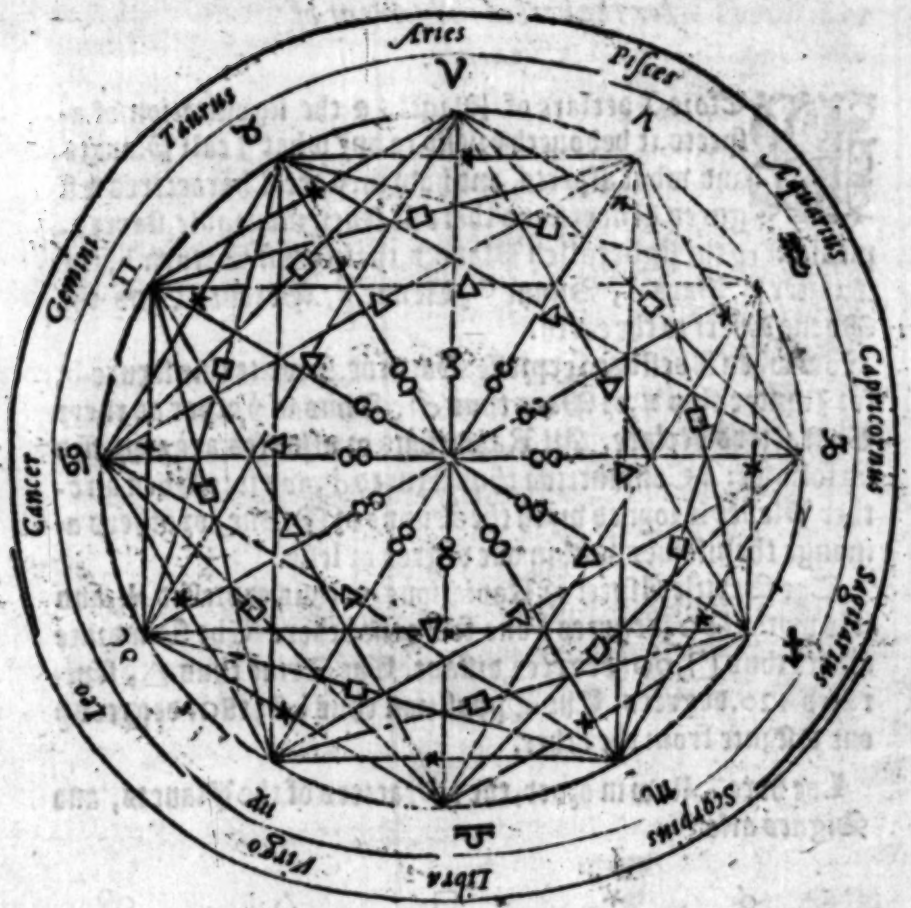
Aries, Taurus, Gemini, Cancer, Leo, Virgo,

♎ ♏ ♐ ♑ ♒ ♓

Libra, Scorpius, Sagitarius, Capricornus. Aquarius, Pisces.

Per

Yet for more plainnesse behold this figure.



The signification of aspectes of Planets among themselues: for the iudgement of vveather.

☌ ♂ cum ♃ The coniunction or meeting of Saturne with Iupiter, in fiery Signes, enforceth great drought. In watry signes, flouds, continuall raine, generall ouerflowinges &c. In ayrie signes, plenty of winds.

The

The Quadrante, Sextile, or Oppoſition of Saturne wyth Iupiter, in moyſte Signes cauſeth troubled Ayre, by Hayle, Wynde, Rayne, Thunder, &c. before and after. ♄□✶,& ☍ cum ♃.

The Coniunction, Quadrature or Oppoſition of Saturne wt Mars, in watry Signes, declare in Sommer rayne, often ſhoures wyth hayle, thunder and lightning. ♄☌□& ☍ cum ♂,

The Coniunction Quadrature or Oppoſition of Saturne wyth the Sunne chiefly in colde ſignes, ſhewe darke weather, hayle, rayne, thunder, and colde dayes. ♄☌□, & ☍ cum ☉.

The Cõiunction, quadrature or Oppoſition of Saturne with Venus, in winter engender, cold and raine, principally in moiſt Signes: in Sommer, mitigation of heate. ♄☌□, & ☍ cum ♀

The Coniunction, Quadrature, or Oppoſition of Saturne wyth Mercurie, in watry Signes, bringe raine, in hotte or dry ſignes, drought in Sommer, thunder lightnings and tempeſt. ♄☌□,& ☍ cum ☿.

The Coniunction Quadrature, or Oppoſition of Iupiter wt Mars in moyſt Signes declare thunders, lightnings and raine in winter, ſnow, or cloudy thicke weather. ♃☌□, & ☍ cum ♂.

The Coniunction, Quadrature, or Oppoſition of Iupiter wt the Sunne, great and moſt vehement wyndes. ♃☌□, & ☍ cum ☉

The Coniunction, Quadrature or Oppoſition of Iupiter wt Venus in moyſt Signes, cold and miſlinges, in the reſt ſignes, fayre weather. ♃☌□,& ☍ cum ♀

The Coniunction Quadrature or Oppoſition of Iupiter wt Mercurie, great wynds. ♃☌□,& ☍ cum ☿

The Cõiunction, Quadrature, or Oppoſition of Mars with the Sonne in fierye ſignes, drought: in watrye, thunder, and rayne. ♂☌□,& ☍ cum ☉.

The Cõiunction, Quadrature or Oppoſition of Mars, wyth Venus, in moyſt ſignes, rayne and tempeſt. ♂☌□,& ☍ cum ♀

The Coniunction, Quadrature or Oppoſition of Mars with Mercurie in hot ſignes, great heat: in dry ſignes, drought in watry, Rayne ſometimes, Thunders, lightninges, and ſodayne fierce wyndes. ♂☌□,& ☍ cum ☿

☿☌□,& ☍ cum ♀. The Coniunction Quadrature or oppositiō of Venus with Mercury causeth rayne, in Sommer they prouoke tempest, the more if they agree in watry signes. Note what is sayd of the Coniunction Quadrature or Oppositiō, the same is also ment of Sextile and Trine, but they are of lesse signification, so the learned noteth.

A Declaration of VVeather, of Aspectes of the Moone vvith Planets.

☽☌□& ☍ cum ♄ THE Coniunction Quadrature or Oppositiō of the Moone with Saturne in moyst signes, bringeth a cloudy day, colde ayre according to the nature of the signe: If she go frō Saturne, to the Sunne, by coniunction or otherwyse, harder weather ensueth.

☽☌□, & ☍ cum ♃ The Coniunctiō Quadrature or Oppositiō of the Moone wt Iupiter in Aries or Scorpio, sheweth fayre weather, White dispearsed cloudes.

☽☌□, & ☍ cum ♂ The Coniunction, Quadrature or Opposition of the Moone with Mars in watry Signes, raine. In hoate Signes, diuers coloured cloudes are made, all the Elemēt ouer. In Sommer often thunder.

☽☌□, & ☍ cum ☉ The Coniunction, Quadrature or Opposition of the Moone with the Sunne in moyst Signes, rainy weather. The more, if the Moone go from the Sunne to Saturne.

☽☌□, & ☍ cum. ♀. The Coniunction Quadrature or Opposition of the Moone wt Venus, chiefly in moyst signes, rayne followeth. The Moone going from Venus to Mars, more variety of weather.

☽☌□, & ☍ cum ☿ The Coniunction Quadrature or Opposition of the Moone with Mercury in moyste signes, sheweth raine and wynde, the more when the Moone passeth from Mercury to Iupiter: then great Windes follow.

Howe

How the weather is iudged by the Orientall and Occidentall station of Planets, with their Combustion in the 12. Signes Celestiall. First of the Planets in Aries.

SATVRNE in Aries Combuste, that is to saye vnder the beames of the Sunne, maketh a cloudy darke troubled ayre: Orientall, I meane in the morning appearing before the Sunne, saye weather. Occidentall, that is to say, shewyng hymselfe after the Sunne going downe, betokeneth great wyndes. ♄ in ♈

VVhat these termes Cõbust Orientall and Occidentall, meane.

Iupiter in Aries combust, a token of raine, being Occidental, it bringeth clouds, & dewes: Orientall, saye pleasant weather. ♃ in ♈

Mars in Aries combust and Occidental, good weather: contrary Orientall. ♂ in ♈

Venus in Aries combust Occidentall, mystnes, great windes: Orientall thunders and rayues. ♀ in ♈

Mercury in Aries combust, Tempest: Occidentall and Orientall, saye windy weather. ☿ in ♈

Of the Planets in Taurus.

SATVRNE in Taurus combuste, and stationary, bringeth thicke cloudes, thunders and troublesome weather. ♄ in ♉

Iupiter in Taurus combuste, indifferent weather: Occidentall, pleasaunt showres. ♃ in ♉

Mars in Taurus combust, a quiet ayre: but Orientall windy. ♂ in ♉

Venus in Taurus combust, thunders, &c. Occidentall saye. ♀ in ♉

Of the Planets in Gemini:

♄ in ♊ SATVRNE in Gemini cõbust and Occidentall, drought.

♃ in ♊ Iupiter in Gemini combust, a good signification.

♂ in ♊ Mars in Gemini combust and Occidentall, heate.

♀ in ♊ Venus in Gemini combust Occidentall, wynde.

☿ in ♊ Mercury in Gemini combust, wynde.

Of the Planets in Cancer.

♂ in ♋ SATVRNE in Cancer combuste, darcke weather, greate windes and troublesome weathers: Occidentall, calmer.

♃ in ♋ Iupiter in Cancer combust, bringeth calme pleasaunt weather.

♂ in ♋ Mars in Cancer combust, great heat.

♀ in ♋ Venus in Cancer combust, a quiet calme time.

☿ in ♋ Mercury in Cancer combust, tempesteons weather, chiefly on the Sea: Occidentall, calmer.

Of the Planets in Leone.

♄ in ♌ SATVRNE in Leone combust, maketh wyndes and mistinges.

♃ in ♌ Iupiter in Leone combust, pleasaunt wyndes.

♂ in ♌ Mars in Leone combust, Occidentall, drought.

♀ in ♌ Venus in Leone combust, drought.

☿ in ♌ Mercury in Leone combust windes.

Of the Planets in Virgo.

SATVRNE in Virgine combuſte, is a ſignificatour of infirmities. ♄ in ♍

Iupiter in Virgine combuſt, manifeſteth abolidance of things. ♃ in ♍

Mars in Virgine combuſt, like vnto Saturne. ♂ in ♍

Venus in Virgine combuſt, drought, Orientall, contrary. ♀ in ♍

Mercury in Virgine combuſte, drought, raging ſeas, Occidentall, drought. ☿ in ♍

Of the Planets in Libra.

SATVRNE in Libra combuſt, ſheweth infirmity of ſight, Orientall, cold wyndes. ♄ in ♎

Iupiter in Libra combuſt, indifferent weather. ♃ in ♎

Mars in Libra combuſt, bringeth moyſture. ♂ in ♎

Venus in Libra combuſt, moyſt ayre. ♀ in ♎

Mercury in Libra combuſt, wyndes. ☿ in ♎

Of the Planets in Scorpio.

SATVRNE in Scorpio combuſte, colde ayre: Occidentall, froſt, Orientall, cold, North wyndes. ♄ in ♏

Iupiter in Scorpio combuſt, raine: Occidental, bitter weather. ♃ in ♏

Mars in Scorpio cõbuſte, declareth moyſture: Oriental, winds. ♂ in ♏

Venus in Scorpio combuſt, rayne, both Occidẽtall & Oriental. ♀ in ♏

Mercury in Scorpio, combuſt, raging weather, chiefly Orientall. ☿ in ♏

Of the

Of the Planets in Sagittarius.

♄ in ♐ SATVRNE in Sagittarius combuste, colde rainy ayre: Orientall cold and froste.

♃ in ♐ Iupiter in Sagittarius combuste, much raine: Orientall, woyse weather.

♂ in ♐ Mars in Sagittarius combust, drought.

♀ in ♐ Venus in Sagittarius combust, rayne: Occidental wind & cold.

☿ in ♐ Mercury in Sagittarius combuste, rayne: Occidental, cleare ayre.

Of the Planets in Capricornus.

♄ in ♑ SATVRNE in Capricornus combuste, signifyeth darcke weather wyth South wyndes: Occidentall colde: Orientall North wyndes.

♃ in ♑ Iupiter in Capricornus cõbust, moyst ayre: Occidentall increasing the same.

♂ in ♑ Mars in Capricornus combust, cloudy: Occidentall some heate.

♀ in ♑ Venus in Capricornus combust, cold ayre: Orientall rayne.

☿ in ♑ Mercury in Capricornus combuste raine, both Orientall and Occidentall.

Of the Planets in Aquarius.

♄ in ♒ SATVRNE in Aquarius combust, cold ayre: Occipental daungerous Seas, Orientall, raine.

♃ in ♒ Iupiter in Aquarius combust: Occidentall, rayne.

♂ in ♒ Mars in Aquarius combust, drought: Occidental and Orientall plenty of wyndy.

♀ in ♒ Venus in Aquarius combust, cloudy: Occidental hotte: Orientall, raine.

☿ in ♒ Mercury in Aquarius combust, showe: Occidentall moze colde, Orientall raine.

Of the

Of the Planets in Pisces.

SATVRNE in Pisces combuste, bringeth cloudes: Occidentall, rayne. ♄ in ♓

Iupiter in Pisces combust Orientall calme waters. ♃ in ♓

Mars in Pisces cõbuste, Occidental drought: Orientall, lightninge and thunders. ♂ in ♓

Venus in Pisces combust cold, Occidentall, disposed to snow. ♀ in ♓

Mercury in Pisces Combust moyst ayre. ☿ in ♓

Thus much of the iudgement of weather.

¶ Seing that I haue now sufficiently declared howe by what rules and tokens, weather is iudged, I thincke it cõuenient to adioyne here a briefe collection, how Plenty, Scarcitie, Sickenesse, Death Alterations, troubles, warres &c. are for euer perceiued.

A Rule to Prognosticate the aforesaid, by the falling of Newyeares day.

Sonday.

IT is affirmed of some, when New yeares day falleth on the Sonday, then a pleasaunt winter doth ensue, a naturall Sommer, fruite sufficient. Haruest indifferent, yet some wynde & rayne, many mariages: plenty of wyne and Hony, death of yong men and cattell, robberies in most places, newes of Prelates, of kinges, and cruel warres in the ende.

Monday.

ON Monday, a Winter somwhat vncomfortable. Sommer temperate, no plenty of fruite, many făcies and fables opened agues shal raigne: kings & many others shal die: mariages shalbe in most places, and a common fall of Gentlemen.

Tuesday.

ON Tuesdaye a stormy winter, a wet Sõmer, a diuers Haruest, corne & fruite indifferente, yet herbes in gardens shall not florishe, greate sickenesse of men, women, and ponge

children. Beastes shal hunger sterue, and dye of the botche: many shippes, galleis and hulkes, shalbe lost: and the bloudy flixes shall kill many men: all thinges deare saue Corne.

VVednesday.

ON Wednesday, loe a warme winter. In the ende snow and froste, cloudye Sommer, plenty of fruite, of Corne, Haye, Wyne, and hony: great payne to women with child, and death to infants, good for sheepe, newes of kynges, great warres, battell, and slaughter toward the middes.

Thursday.

ON Thursday, winter and sommer windy. A rainy harueste: there fore we shall haue ouerflowinges. Much fruite, plenty of hony. Yet flesshe shalbe deare, cattell in generall shall dye, great trouble, warres. &c. With a licentious life of the feminine sexe.

Friday.

ON Friday, wynter stormy, Sommer scant pleasaunt, Harueste in different, little store of fruit, of wyne and hony, corne deare. Many bleare eyes: youth shal dye. Earthquakes are perceyued in many places, plenty of thunders, lightnings and tẽpest, with a sodayne death of cattell.

Saturday.

ON Saturday, a meane wynter: Sommer very hot. A late Haruest, good cheape garden hearbes, much burning, plẽty of hempe, flaxe, and hony. Olde folke shal die in most places, Feuers and tercians shall greeue many people, greate mutteringe of warres, murders shalbe sodenly committed in manye places, for light matters.

¶ Now that I haue opened diuers wayes, both for the learned and vnlearned, how weether to come at all tymes may be well iudged and knowẽ. &c. I thought it mete for farther knowledge therin, not to omitte here the naturall causes of such and so many alterations of ayre. Loe therefore orderly they follow.

Natu-

Naturall cauſes, conducing to all the aforeſayd, and firſt of the Raynbovv.

THe Rainbow is the ſhininge and reboundinge of beames of lighte, that tourne to the contrarye vapoure againe in the cloude. It declareth ſometime rayne, and manye tymes fayre weather: when the one, and howe the other, is before opened.

Of Rayne.

RAyne is a colde vapoure, an earthye humour, or fumoſities, out of waters or earth drawen vp by the vertue of ꝑ Sũne, to the neither part of the middle ſpace of ꝑ ayre, there through cold thicked, then diſſolued: thus engẽdred, falleth on the earth.

Heere I leaue to ſpeake of myraculous raynes, as Milke, Blood, Fleſh, Iron, woll. &c. For more ſatiſfying in theſe, read Plinius in the ſecond booke 58, Chapter.

Quare lapides pluant, lege Pli. Lib. 2. Cap. 58.

Of Froſt and dewe.

A Colde moiſte vapoure, a litle way drawen vp in the dayre through faint heat of ꝑ Sũne deſcendeth in ꝑ night, diſſolued on the earth, there congelated or reſolued into water, the one called Froſt, the other Dewe. The laſte is a ſigne of fayre weather in the Spring or Harueſt.

Roſ eſtate, pruina hieme fit.

Of Snowe.

IT is a moiſte vapoure, drawen vp to the middle Region of ꝑ ayre, then thicked, and froſen into the bodye of a cloude: So congelated, deſcendeth.

Nix humor modicè concretus.

Of Hayle.

A Cloude reſolued into water, in the fall congelated, maketh Haile. The higher it commeth from aboue, and the lõger it tarryeth in the ayre, the rounder Hayle.

Grãdo, pluuia in diſcenſu, cõgelata.

Of vvindes.

Venterũ ergo materia, calida & ſiccæ exhalatio.

VVIndes is a multitude of dry exhalacions, drawen vp frõ the earth and aboue the earth enclosed here and there.

Of Earthquakes, in the most quiet time.

Quẽadmodũ in nube tonitruum, ſic in terra tremor.

PLenty of wyndes, entred into hooles, caues, or caues of the earth, which absent from aboue the earth causeth quietnes: the violent blasting out of them (the earth closed againe) is the Earthquake: *Signum eſt futurorum Bellorum.*

Tokens of Earthquakes to come.

Signa terræmotus.

AFiery cloude, appearing in the Element like a litle Pillar, is a token of Earthquakes to come. The obscurity or darknes of the Sunne, without cloudes, and straungely coloured, bloudy or otherwyse is a token of Earthquakes.

Also when Well water and others are troubled or salte, or infected by sauour. &c.

A great quietnes of ayre, by lande and sea, & chiefly the long absente of wyndes.

Also straunge noyses hard, as clamoures of men, rushing of harneſſe, mourninges lamentacions. &c. All these haue beene obserued, to signifie Earthquakes at hande.

Of Thunders and Lightninges.

Fulgetrũ prius cerni, quã tonitrũ autiri; cũ ſimul fiant certũ eſt. Pli. lib. 2 Cap. 56. cont. a Arist.

THunder is the quenching of fyre, in a cloude. Or thunder is an exhalation, hot and dry, mixt with moisture carried vp to the middle Region, there thicked and wrapped into a cloud, of this hotte matter coupled wt moystues, closed in the cloud, groweth a strife, the beate beatinge, and breaking out the sides of ỹ cloude with a thundringe noyse: the fyre then dispersed, is the lightninge. Thus for the learned: *Tonitruum ſonitus eſt, qui editur quando nubem rumpit halitus. Fulmen flamma vel repentinus eſt ignis, qui ex colliſione nubium, aut ruptura naſcitur.* Aristotle affirmeth the lightning after the thunder, but the fyre doth first appeare, in that the sight is before the hearing. If this satisfie not, read the second of his Meteoron. Here followeth a note of

lightninges.

There be three kindes of Lightninges,
dry, moist, and clere.

DRy do not burne but cleue, depart or deuide. Moyste burne not but alter colour. The Clere are of marueylous natures full barels by it are emptied. It melteth money in the purse. it breaketh the swoyde, the purse and scaberde not perished, yea ware in them vnmolten. Note.

Of the Comets or flames in the night.

A Comet is a flame workinge in a dry, hot, slymie exhalation, drawē vp to the highest part of the ayre. His matter or substaunce after it is brent, dispersed, prouoketh wynds. Ventorum causa.

The naturall cause of the Sunne in Eclipse.

NOthing els is the Eclipse of the Sunne, but ỳ direct puttinge the bodye of the Moone betweene the Sunne and the earth: or betweene our sighte and the Sunne and the earth, or betweene oure sighte and the Sunne, which chaunseth onely at the chaunge.

A Corollarie.

BY this gather the darcknesse at Christes death, not to stand by naturall Eclipticall cause: but by supernaturall, or Myracle: for it was at the full Moone, ỳ Scriptures witnes, which enforced Dionisius Areopagita, at the time of his passion, to speake thus. *Aut Deus naturę patitur, aut mundi machina dissoluitur.* Miracle.

The cause of the Moone Eclipsed.

THe Sunne being in the contrary point to ỳ full Moone, enforceth the shadowe of the earth then directly put betweene the Sunne & the Moone, toward ỳ Moone, hiding more or lesse of the Moone, as she differeth from the Ecliptical. Some obserue pestilente plagues, soddaine battayle, greate dearth, to ensue these Eclipses: which all I desire GOD to auerte from his chosen: Many other thinges by these Eclipses are gathered, as Longitudes of Countryes, the Quantity of the Sunne, contaynynge the bignesse of the Earth 162. tymes: the Vniuersalis, est Eclipsis Lunę. Nō semper in noui Lunio, sed nin ca. & cauda.

Compasse of the earth 21600. miles, whose thickneſſe, accor-
ding to Archimedes rule is 6872 miles, & eighte eleuenthes
of a mile.

The Sunne contayneth the Globe of the Moone 7000. times.
Saturnus compreheudeth the bignes of the earth 91. times, Iu-
piter 95 times Mars, ones and ten ſixtenthes. Venus the 37.
part. Mercury, one 32000. part of the earth.

Omniũ planetarum ad terrã magnitudo.

Note here, that Alfraganus affirmeth the leaſt fixed ſtarre per-
fectly ſeene, as bigge as the whole earth.

Dimetiens ☉ ad terrę dimetiẽtem 11. ad. 2

*HÆc non erunt admiratione, ſi Globi capacitatem ex longitudi-
ne Diametri quæſieris. Continet enim ſolis dimetiens, terræ di-
metientem quinquies & ſemiſſem. Eſtque proportio diametri So-
lis ad terræ dimetiẽtem, quæ eſt numeri vndecim ad duo, quintupla
ſeſquialtera. Cubus ſolis mille tercentum vnam & triginta partes
tales continet, cuiuſmodi terræ Cubus octonas complectitur. Cubus
enim numeri vndecim, eſt mille tercentum vnum & triginta. Cu-
bus vero binary, qui eſt terræ, octo Subducto quoties id fieri poteſt,
minore Cubo qui eſt terræ, a maiore qui eſt ſolis cognoſcitur Cubi ad
cubum proportio, & quanto Sol maior terra ſit. Inuenimus ergo octo
centies ſexagies ſexies, in mille tercentum vno & triginta.*

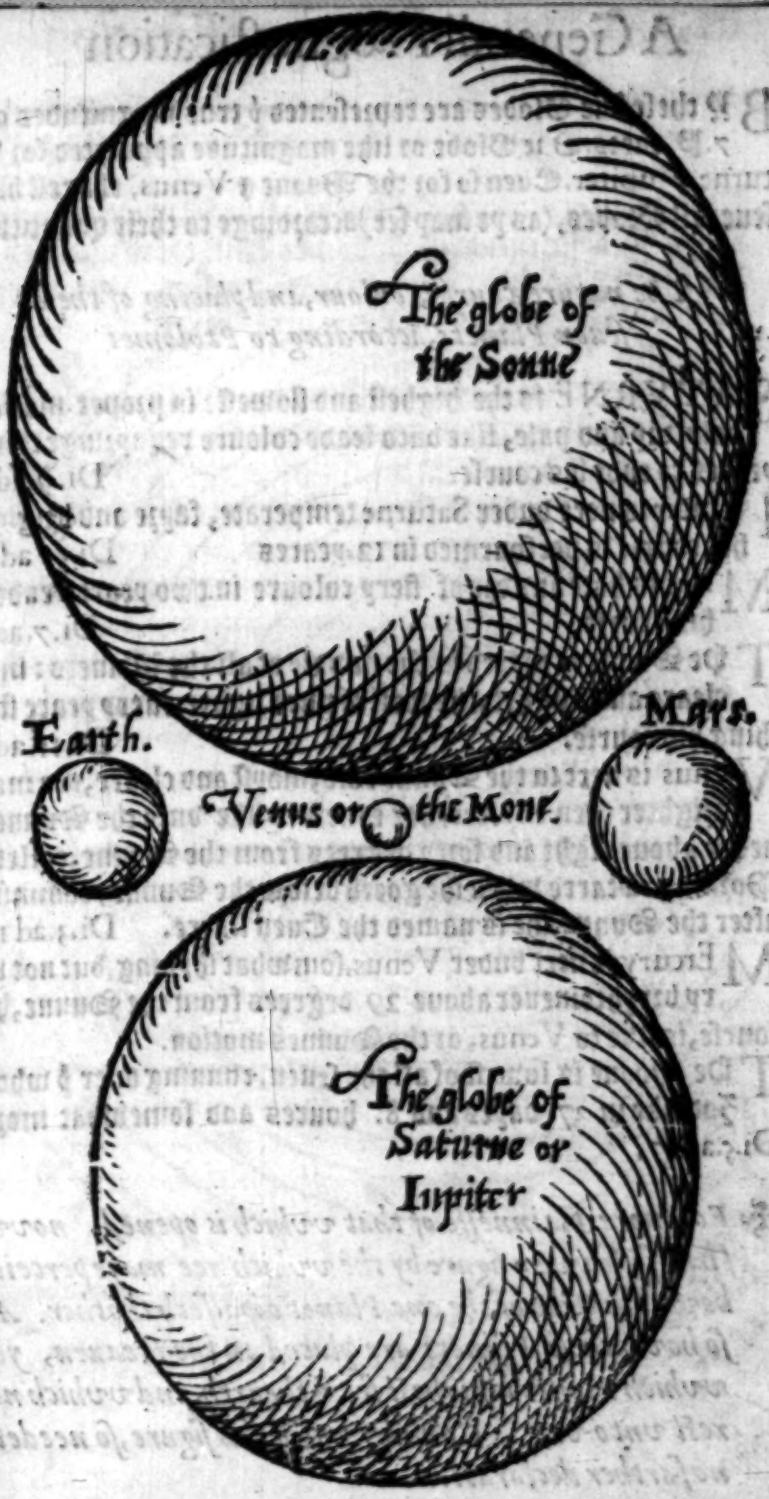
Cubus ☉ 1331 terrę 8.

Dimetiens terrę ad diam ☽ 17 ad 5. Cubus terræ 4913. Cubus ☾ 125.

*Terræ Diametros Lunæ dimetientem complectitur ter, & duas
eius diametri portiones quintas: eſtque ea proportio dimetiẽtis terræ
ad Lunæ diametrum, quæ eſt ſeptemdecim ad quinque tripla ſuper-
bi partiens quintas. Cubus numeri ſeptemdecim eſt quater mille nõ-
genta tredecim. Cubus numeri quinque eſt cẽtum viginti quinque.
Maiore Cubo per minorem diſtributo, reperimus numerum centum
vigintiquinque, tricies nonies in quater mille nongentis tredecim:
quod paululum à ſuperioribus obſeruationibus differt.*

*The quantities, or rather true proportion of all
the Planets vnto the Earth, ocularly de-
monſtrated by figure follo-
vvinge.*

The Globe



Mercury is but a point in respect of these quantities.

BY these fiue Globes are represented ꝑ true magnitudes of ꝑ 7. Planets. One Globe or like magnitude appointed for Saturne & Iupiter. Euen so for the Moone & Venus, the rest haue seuerall Globes, (as ye may see) accordinge to their quantities.

The nature, course, coulour, and placing of these seuen Planets, according to Ptolomei

♄ SATVRNE is the highest and slowest in proper motion, cold, dry and pale, like vnto leade coloure requyringe thirty yeares to ende his course. Di. 9. ad 2.

♃ IVpiter is next vnder Saturne temperate, fayre and bright: his course is performed in 12. yeares Di. 32 ad 7.

♂ MArs is hote and dry of fiery coloure in two yeares endeth his course. Di. 7. ad. 6

☉ THe Sunne is placed in the middle of all the Planets: most cleare and bright, the well of pure light: euery yeare finishing his course. Di. 11. ad 2.

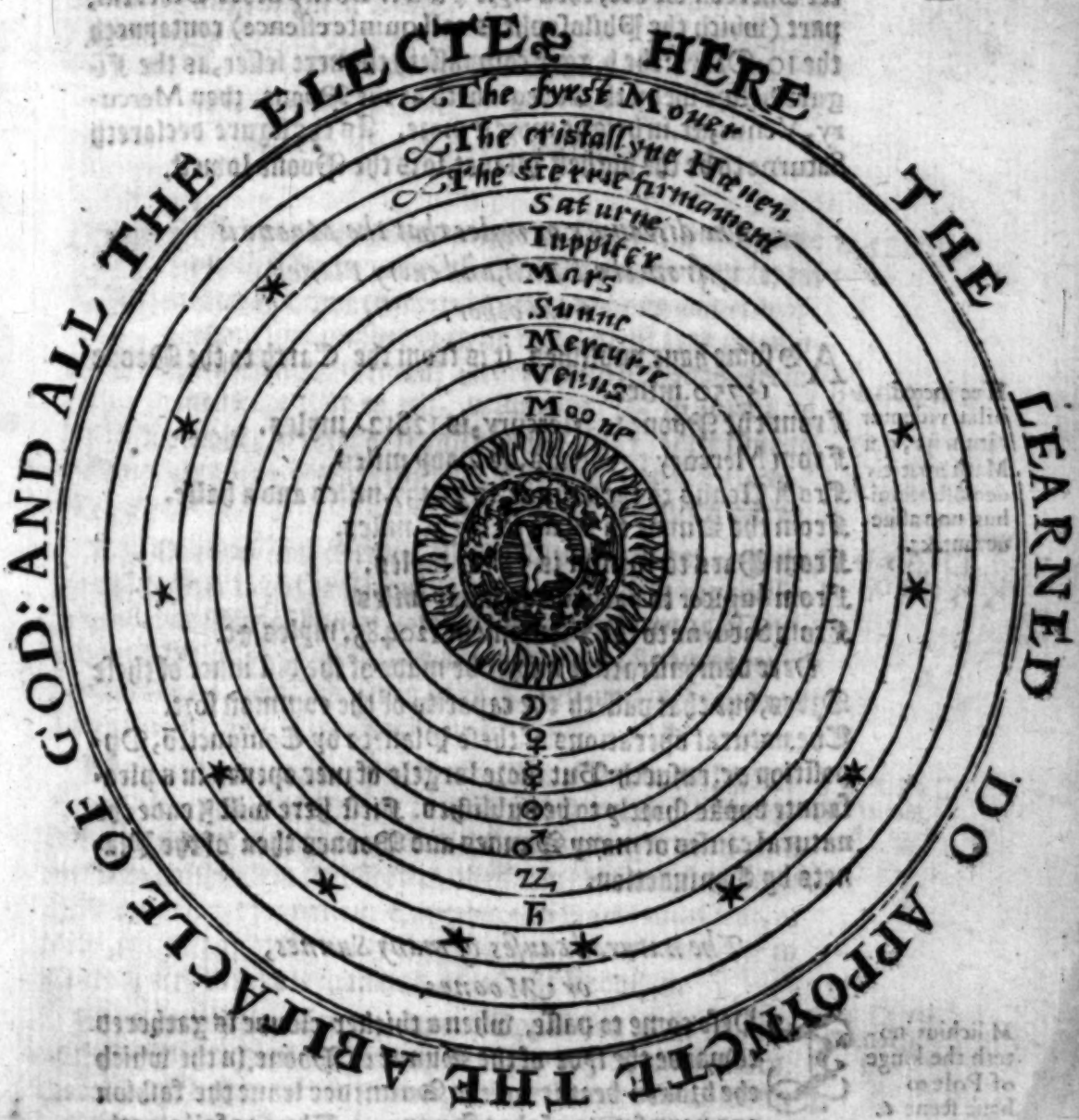
♀ VEnus is next to the Sunne cold, moyst and cleare, yea more brighter then Iupiter, her course is like vnto the Sunnes: neuer aboue eight and forty degrees from the Sunne, called ꝑ Morning Starre when she goeth before the Sunne, comming after the Sunne, she is named the Euen starre. Di. 3. ad 10.

☿ MErcury is next vnder Venus, somwhat shyning, but not very bright: neuer aboue 29. degrees from the Sunne, his course, is like to Venus, or the Sunnes motion.

☽ THe Moone is lowest of all the seuen, running ouer ꝑ whole Zodiake in 27. dayes and 8. houres and somewhat more. Di. 5. ad 17.

℞ *For more plainnesse of that vvhich is opened, novve shall followe a figure by the vvhich yee maye perceiue hovv the Orbe of the one Planet cõpasseth thother. Also hovv these Planets are placed in the Heauen, yea vvhich Planet is highest fr. the earth, and vvhich nerest vnto vs. Consider vvell this figure, so needeth no farther declaration.*

The


THE LEARNED DO APPOYNCTE THE ABIFACLE OF GOD: AND ALL THE ELECTE & HERE
The fyrst Mouer
The cristallyne Hæuen
The sterrie firmament
Saturne
Iuppiter
Mars
Sunne
Mercurie
Venus
Moone

Ye maye here behold first the Elementall part subiect vnto alteration, consisting of the foure Elements, first Earth & Water whereon we are, then Ayre & Fire. Then ỹ other Ethereal, part (which the Philosophers call quinte essence) contayneth the 10. Orbes: the bigger compasseth the next lesser, as the Figure before sheweth. It beginneth at the Moone, then Mercury, Venus, &c. in height more & more. As the figure declareth Saturne to be the highest Planet, so is the Moone lowest.

The distaunce or myles that the Moone is from the Earth, and euery Planet from other.

Hæc incredibilia videntur tãtum ijs, qui Mathematicis demõstrationibus non assueuerunt. &c.

AS some haue published, it is from the Earth to the Moone 15750. miles.
From the Moone to Mercury, is 12812. myles.
From Mercury to Uenus, as many miles.
From Uenus to the Sunne, is 23437. miles and a halfe.
From the Sunne to Mars is 15725. miles.
From Mars to Iupiter is 78721 myles.
From Iupiter to Saturne, as many miles.
From Saturne to the Firmament 120485. myles. &c.

Here demonstration might be made of the distaunce of these Orbes, but that passeth the capacity of the common sort. The natural operations of these Planets by Conjunctiõ, Oppositiõ &c. ensueth: But more largely of mee opened in a pleasaunte booke shortly to be published. First here will I ende the natural causes of many Sunnes and Moones then of the Planets by Conjunction.

The naturall causes of many Sunnes, or Moones.

Mlichius noteth the kinge of Pole to haue seene 6. Sũnes at ones.

THese come to passe, when a thicker cloude is gathered towarde the syde of the Sunne or Moone, in the which the broken beames of the Sunne doe leaue the fashion and very forme of that Sunne. Thus as followeth, saith Plinius in the secõd booke of the Historie of Nature, and 31. Chapter. No mo Sunnes are perceyued in oure time then three:

three: and they are neuer seene, eyther aboue or beneath the Sunne, but on the sides: neuer in the nighte but onelye at the Sunne rysing, or going downe.

What is to be chosen or auoyded vnder euery aspect of the Moone, with her signification in the 12. signes, touching the same.

The Coniunction, Quadrature or Oppositiõ of Saturne with the Moone, causeth an euill vnluckie daye for all matters. Leaue therfore to haue to do any maner way: nothing shal prosper or come wel to passe then attempted. Yet the Sextile or Trine of Saturne with ☽ Moone, declareth a conueniente time to till, delue or digge, to sowe, to lay foundacions, to erect or repaire houses, yea a meete time to obtaine sutes of fatherly fauours. The Moone in Capricorn or Aquarius, bringeth this latter effect of the Sextile & Trine. ♄ ☌ □ vel ☍ cum ☽ ; ♄ ✶ & △ cũ ☽ ; ☽ in ♑ vel ♒

The Coniunction, Sextile, Trine, Quadrature or Opposition of Iupiter with the Moone, sheweth a fortunate day chiefely to obayne sutes of Kings, noble Princes, Prelates &c. of lawyers and Religious persõs: and a meete time to studie: to iourney, to take an honest matter in hand. The Moone in Taurus, in Leo or Sagittarius, sheweth the same. ♃ ☌ ✶ △ □ vel ☍ cum ☽ ; ☽ in ♉ ♌ vel ♐

The Coniunction, Sextile, Trine, Quadrature or Opposition of Mars with the Moone, warneth thee not to matche thy selfe ☽ day with warriours notwithstanding very good & most meete to finishe all maner fiery workes: nought to iourney: yet most conuenient for valiãt Captaynes to worke theyr feat, to leade, encourage or stomacke theyr souldiours most vnmeete to treate peace, to take seruauntes, or to seeke frendship. ♂ ☌ ✶ △ □ ☍ cum ☽.

The Coniunction, Quadrature or Opposition of the Sunne with the Moone, declareth a very vnhappy day for all matters: therefore attempte nothing, ne any maner sute: neyther plante, build, ne iourney. Yet the Sextile and trine are very fortunate, specially to obtaine sute of kinges, Princes and other Nobles. The Moone in Aries enforceth the effect of this latter part. ☉ ☌ □ vel ☍ cum ☽ ; ☽ ♈ in

♀ ☌ ✶ △ □ vel ☍ cum ☽. The Coniunction, Sextile, Trine, quadrature or Oppositiõ of Venus wyth the Moone, causeth a day most apt to obtaine al suites of women good to woo, to attempt mariage, and to folow all maner pleasures, and pleasaunte pastimes: not vnmeete to hyre seruauntes, to let bloud, &c. The Moone in Libra or Pisces, prouoketh the like.

☿ ☌ ✶ △ □ vel ☍ cum ☽. The Coniunction, Sextile, Trine, Quadrature, or Oppositiõ of Mercury wyth the Moone, promiseth a fortunate happy day, to bie & sell: very good to enter children in Liberall artes: an apte time for the versifiar: good to vse marchaundise, to iourney, to sende embassage, to giue accomptes and such like.

☽ in ♊ ♎ vel ♒. The Moone in Gemini, Cancer or Virgo, enclineth euen to the same aforesayd.

☽ cum ☊. The Moone with the Dragons head, sheweth a luckie daye for all matters with the tayle contrary.

Now ensueth a Table shewynge what signe the Moone is in, and shall be for euer, declaring also the meetest time to let Bloud, to Purge, and to Bathe.

THe Table hath at the head seuen titles. The first monethes: the second Dayes: then ỳ Prime: the twelue Sygnes: the titles to let Bloud, to Purge and to Bathe.

¶ Here it is to be noted, that those dayes are good for these purposes, which be signed wyth this letter G: and those euill dayes, that are noted with B.

This

This Table declareth for euer, in what Signe the Moone is or ſhall be at any daye in the yeare. It ſerueth alſo very well to let Bloud, to Purge, and Bathe.

Monethes.	Daies.	Prime.	The 12. Signes.	To let Bloude	To Purge.	To Bathe.
Febr. Nouc.	1	3	Aries.	G	B	G
Marche.	2		Aries.	G	B	G
	3	14	Taurus.	B	B	B
Decembre.	4	6	Taurus.	B	B	B
	5		Gemini.	B	G	
Aprill.	6	17	Gemini.	B	G	
	7	9	Cancer.		G	G
Maie.	8	1	Cancer.		G	G
	9		Cancer.		G	G
	10	12	Leo.	B	B	G
	11	4	Leo	B	B	G
Iune.	12		Virgo.	B	B	B
	13	15	Virgo.	B	B	B
Iuly.	14	7	Libra.			
	15		Libra.			
	16	18	Scorpius.		G	G
	17	10	Scorpius.		G	G
Auguſte.	18	2	Scorpius.		G	G
	19		Sagittarius	G		G
	20	13	Sagittarius.	G		G
	21	5	Capricornus	B	B	B
Septembre.	22		Capricornus	B	B	B
	23	16	Aquarius.			G
Ianua. Octo.	24	8	Aquarius.			G
	25		Piſces		G	G
	26	19	Piſces.		G	G
	27	11	Piſces.		G	G

Seeke oute vnder the titles of the monethes, the name of the moneth, whose day you must loke out right against the moneth, vnder the title of dayes, & there begin to tel downewards, 1.2,3, &c. to the ende, if it so require, & then from the beginning, if neede be, vntil you haue reckened the nomber of the day ẏ you seeke. Loke what nomber it falleth vppon in this table vnder ẏ title of dayes ẏ nomber keepe in minde. Then seeke vnder the title of the Prime, the golden nomber for ẏ yere right against that leftwarde vnder the titles of Dayes, begin to tell downewards, 1.2.3. &c. vntill you haue reckned the nomber which you did keepe in minde. Against that towards your right hand, vnder the title of Signes is the signe wherin the Moone shalbe ẏ day. Euen then vnder the other titles, ye shall finde in right order for Letting bloud for Purging and Bathing, according as they be noted with *G* which is good, and *B* signifyeth bad.

Ensample.

The sixt day of March in the yeare of our Lord 1555. I desire to know what celestiall signe the Moone doth then occupie. I finde first the name of the Moneth, ẏ is March: and the day as foloweth, in ẏ next order of this table. I begin here to tell right against the Moneth at the Figure of 2. saynge 1.2.3. &c. so I haue at the ende, & compte of sixe dayes this figure 7. which I kepe in minde. Now I must seeke out the Golden nõber for the yere aforesaid, vnder the title of the Prime here, ẏ is 17. against the which on the left side is 6. There you must begin againe to compte 1 2.3. &c vntill you come to your nomber 7. So on your right hande in the rowe or order you shall see Virgo, the Celestiall Signe ẏ the Moone is in and after ẏ these three letters *B* which declare bad or euill to let Bloud, to Purge or Bathe, agreeable to the titles in the head *G*, there had signifyed good.

¶ For as much as letting of Bloud, Purging, & Bathing, Inundacions: Fluds, Timber fallinge, Sowing, Plãting, Grafting, Cutting &c. depend chiefly on the Signe wherin ẏ Moone is, which I haue eũ before plainly opened, I thought it meete to haue them now orderly touched, as followeth.

A Con-

LEt bloude at no time without greate cause, for it bringeth weakenes & manye infirmities. If ye do, see it be after good digestiõ, & fasting, in a fayre temperate day beware before of all maner exercise, Bathings, watchings, & carnall copulaciõ. &c. After vse fine meates of light digestion, abstayning from all the aforesaid, vntill the fourth day.

Malum minuit vel purgationibus vti, tempore caloris, propter defectum humoris.

These Signes are most daungerous for bloude letting, the Moone beinge in them, Taurus, Gemini, Leo, Virgo, & Capricornus, wt the last halfe of Libra and Scorpius. The rest are all good, so the Moone beare no Dominion in that member which ye cut. As followeth.

Ill to let bloud in ♉ ♊ ♌ ♍ ♑.

Beholde the figure.

The Dominion of the Moone in mans body.

Aries.	THE	Head and Face.
Taurus.		Necke.
Gemini.		Armes, Handes, Shoulders.
Cancer.		Brest, Stomacke, Ribbes.
Leo.		Hart, Backe.
Virgo.		Bowels, Belly.
Libra.		Raynes, Nauill, Buttockes.
Scorpius.		Secrete members.
Sagittarius.		Thyes.
Capricornus.		Knees,
Aquarius.		Shinnes, Legges.
Pisces.		Feete.

FRom the chaunge to the first quarter, a meete time to letting men blonde.
From the first Quarter to the Full, good for middle age.
From the Full to the last Quarter, apt for aged folke.
From the last Quarter to the chaunge, best for olde men.

Signes meete for the complexions.

Aries. Sagittarius.	For the Fleumaticke, the heade, and thyes excepted.
Libra. Aquarius.	For Melancholike: buttockes and legges excepted.
Cancer. Scorpio.	For Cholericke: breast, members, and feete excepted.
Pisces.	For the Sanguine, all be apt that before are named good.

Hec diligētissimè obseruare oportet solertē Medicū, nisi meliora periculā cogant.

In the Spring time, let blood at the right syde.
In Haruest time at the left syde.

The learned Phisicions will consider, beside all that is sayd, the Coniunctions, Oppositions, & Quadrat aspectes of the Planets

nets with many other thinges, Astronomicall, most necessary both in Bloudletting, Purging, Bathing, &c.

For to take Purgation and to Bathe.

The meetest time to take Purgacions &c. is neither in hotte, nor colde dayes that is from the tenthe of Marche, to the twelfth of June.

Further by rules Astronomical, it must be performed whē the Moone is in colde, moist, and watry signes, as Cancer, Scorpius and Pisces: comforted by Aspectes and raciations of Planets, fortifying the vertue of the body expulsiue. good to purge ♋ ♏ ♓.

The Moone in Aries, Taurus, & Capricornus, naught. One cause of vomiting the purgation is if the Moone haue aspecte to any Planet retrograde. Bad to purge ♈ ♉ ♑.

The Moone in these Signes following, very good to bathe: Aries, Leo, Sagittarius, Cancer, Scorpius, & Pisces. Good to bath ♈ ♌ ♐ ♋ ♏ ♓.

These ensuing are euill to bath: Taurus, Virgo and Capricornus. Bad to bath ♉ ♍ ♑.

Of Inundacions or Flouds, of Timber fallinge, Sowinge, Planting, Graffing, heare clipping, Shauing, and gelding.

The flood is biggest at the full: because then dispersinge her vertue, she filleth all places with moysture: By cōmon experience, ioyned with reasning I know, that þ full the Moone loseth all bodies with humours, and so are emptied, growing to the chaunge. Of this, some gather the fall of timber at the chaūge, more to the purpose then other times; wanting then superfluous moysture, the cause of putrefaction. *Omnis putredo ab aqueo humida ortum habet.* Schonde willeth from the 1. day vnto the 22. daye of the Moone, trees to be felled, and þ after Midsommer to January. So timber is stroge, sound, and hoyde of wormes. The fall of Timber.

To Sow, Taurus, Cancer, Virgo, Libra, and Capricornus are best in the increase of the Moone. Good to sowe ♉ ♋ ♍ ♎ ♑

To Plant or Graffe, is best when þ Moone both her being in any fixed signe, either in Taurus or Aquarius, in the encrease. To plant or graffe. ♉ ♒.

Heare

Here cut groweth wel, ☽ Woane increasing, being in Taurus, Virgo, or Libra.

Cutting, Shauing, Clipping, in the wane causeth baldnes, what is then cut, groweth litle. *Calustium prohibet oleum Tartari.*

The beste time of Cuttinge is in Cancer, Scorpio or Pisces in the wane.

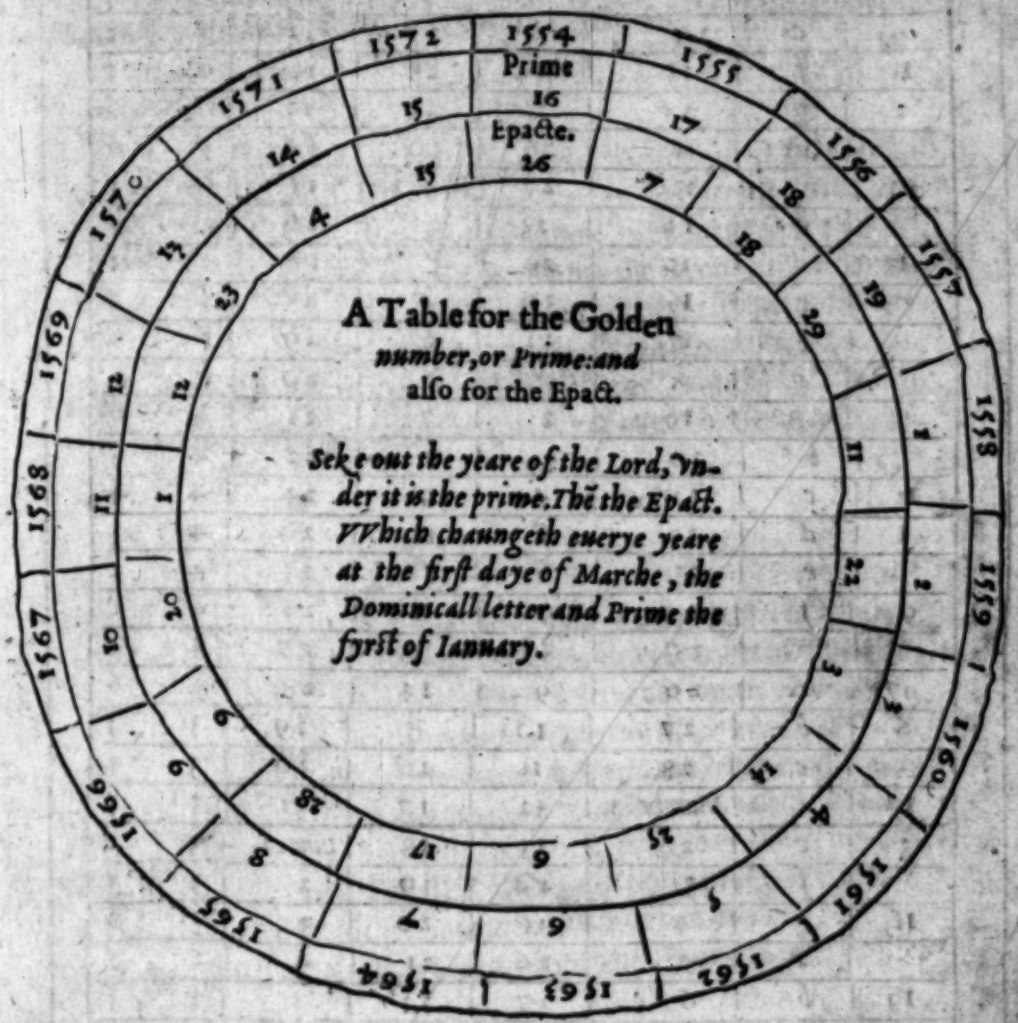
These two rounde Tables that nowe ensue, conduce to the rest following.

The yeare 1554. ☽ was *Dominical*. The next yere 1555. *F* shalbe. Then *E*, vnto *S. Mathies day*, and *D*, vnder him vnto the end of the yere. So orderly, rightward in this Circle for euer. Where two letters are, that is the *Leape* yeare.

Or thus for the Leape yeare.

Deuide the yere of our Lorde by 4. If no thyng be left, it is the *Leape* yeare. The remayne noteth the. 1. the. 2. or. 3. yeares after the *Leape* yeare.

VVhen ye haue gone round about the yeares, of these twvo Tables, beginne againe.



A Table for the Golden *number, or Prime: and* also for the Epact.

Seke out the yeare of the Lord, vnder it is the prime. The the Epact. VVhich chaungeth euerye yeare at the first daye of Marche, the Dominicall letter and Prime the fyrst of Ianuary.

The prime.	The sondaies letter.	The first Lent sonday.	Easter day.	Rogation.	whitsontide.	Betwixt whitsond. & midso.	
16		Februarie.	Marche.	April.	Maye.	wek.	daies
5	d	8	22	26	10	6	3
	e	9	23	27	11	6	2
13	f	10	24	28	12	6	1
2	g	11	25	29	13	6	0
	A	12	26	30	14	5	6
10	b	13	27	May. 1.	15	5	5
	c	14	28	2	16	5	4
18	d	15	29	3	17	5	3
7	e	15	30	4	18	5	2
	f	17	31	5	19	5	1
15	g	18	April. 1	6	20	5	0
4	A	19	2	7	21	4	6
	b	20	3	8	22	4	5
12	c	21	4	9	23	4	4
1	d	22	5	10	24	4	3
	e	23	6	11	25	4	2
9	f	24	7	12	26	4	1
	g	25	8	13	27	4	0
17	A	26	9	14	28	3	6
6	b	27	10	15	29	3	5
	c	28	11	16	30	3	4
14	d	Marche. 1.	12	17	31	3	3
3	e	2	13	18	Iune. 1.	3	2
	f	3	14	19	2	3	1
11	g	4	15	20	3	3	0
	A	5	16	21	4	2	6
19	b	6	17	22	5	2	5
8	c	7	18	23	6	2	4
	d	8	19	24	7	2	3
	e	9	20	25	8	2	2
	f	10	21	26	9	2	1
	g	11	22	27	10	2	0
	A	12	23	28	11	1	6
	b	13	24	29	12	1	5
	c	14	25	30	13	1	4

The vse of this Table appointed for the moueable Feastes.

This Table contayneth in the first title the Prime in the seconde, the Domicall letter in the thirde, Lent, in the fourth, Easter day, in the fifth, Rogacion day, in the sixt Whitsonday: in the seuenth, howe manye weekes and dayes are betweene Whitsondaye and Midsommer. Which all appeare by their titles.

Ye shall consider by the litle rounde Table before put forth, what nomber ꝑ Prime is that yere, wherof ye require to know all these aforesaid and seeke that nomber vnder the first title of this Table ensuinge. Then seeke vnder the seconde the Dominicall letter next after the Prime for that yeare: which title ensueth the Prime. Directly against the same Dominical letter, towards your right hande in the same lyne, ye shall finde vnder the titles, what Moneth and daye, euery one of these aforesayde shall happen.

Ensample.

I would know this yeare of our Lord M.D.LV these moueable feastes, the first Lente Sondaye, Easter daye, Rogation dayes, Whitsonday, and how many weekes betwixte Whitsonday, and Midsommer day. First I finde the prime this yeare, xvii. which xvii. I loke out vnder the title of Prime in the Table before. Then I seeke in the next order (and after the Prime, for the Dominicall letter that yeare. Now in right order, according to ꝑ titles, I find the third of March to be the first Lent Sonday: the xiiii. of Aprill Easter day: the xix. of May, Rogacion, the ii. of June, Whitsonday: and iii. weekes and one daye betwixt Whitsonday, and Midsommer day. Thus for euer.

Howw to knoww the age of the Moone, then the chaunge, and Quarter for euer.

FIrſt learne the Epact, as I haue inſtructed) for that yere ye ſeeke to know the age of the Moone, then recken how many dayes is paſt of that moneth, which day ye deſire to know ꝑ age. Put that nomber to the Epact. Then begin at Marche, and reckē for euery moneth from him orderly one, vntil your ſayd day, includinge both the moneth of Marche, and alſo the moneth of your ſaid day. Adde all theſe dayes vnto your former nomber: putting away as many xxx. dayes. as ye finde. The reſt. is the age of the Moone. The age founde, the Chaunge is knowen. If ye adde vii. dayes to the chaunge, ſhee haue the firſt quarter, then 7. dayes, and ſomewhat more, ſheweth the Full: and ſo to it adding 7. and more, bringeth the laſt quarter thus by 7. vnto ꝑ Newe Moone.

Enſample.

¶ The x. day of Ianuary, the yeare then being M. D. L. ii. I deſire the age of the Moone. I finde the Epact vntill Marche enſuing to be xxvi. that added vnto x. maketh xxxvi. then a xi. for the monthes from March to Ianuary, includinge both Monethes, bringeth xlvii. now xxx. puſled away, leueth xvii. the age of the Moone.

Nowv enſueth two perfect Tables, declaring the true Houre and Minute of Ebbing and Flowing in moſt coaſtes of Englande.

Quin-

Quin South-ampton. Ports: moth		Redban Aberdē		Graues ende.		Dūdee. S. And.		Ages fr̄ the Moon	London Tinmot Hertle pole.		Ber-wyke.		Erith. Lyeth. Dūkar.		Fahmot	
South.		S b w.		S S w.		S w b S			S w.		S w b w		w S w		w b S.	
H.	M.	H.	M.	H.	M.	H.	M.	☽	H.	M.	H.	M.	H.	M.	H.	M.
12	48	1	33	2	18	3	3	1	3	48	4	33	5	18	6	3
1	36	2	21	3	6	3	51	2	4	36	5	21	6	6	6	51
2	24	3	9	3	54	4	39	3	5	24	6	9	6	54	7	39
3	12	3	57	4	42	5	27	4	6	12	6	57	7	42	8	27
4	0	4	45	5	30	6	15	5	7	0	7	46	8	30	9	15
4	48	5	33	6	18	7	3	6	7	48	8	35	9	18	10	3
5	36	6	21	7	6	7	51	7	8	36	9	21	10	6	10	51
6	24	7	9	7	54	8	39	8	9	24	10	9	10	54	11	39
7	12	7	57	8	42	9	27	9	10	12	10	57	11	42	12	27
8	0	8	45	9	30	10	15	10	11	0	11	45	12	30	1	15
8	48	9	33	10	18	11	3	11	11	48	12	33	1	18	2	3
9	36	10	21	11	6	11	51	12	12	36	1	21	2	6	2	51
10	24	11	9	11	54	12	39	13	1	24	2	9	2	54	3	39
11	12	11	57	12	42	1	27	14	2	12	2	57	3	42	4	27
12	0	12	45	1	30	2	15	15	3	0	3	45	4	30	5	15
12	48	1	33	2	18	3	3	16	3	48	4	33	5	18	6	3
1	36	2	21	3	6	3	51	17	4	36	5	21	6	6	6	51
2	24	3	9	3	54	4	39	18	5	24	6	9	6	54	7	39
3	12	3	57	4	42	5	27	19	6	12	6	57	7	42	8	27
4	0	4	45	5	30	6	15	20	7	0	7	45	8	30	9	15
4	48	5	33	6	18	7	3	21	7	48	8	33	9	18	10	3
5	36	6	21	7	6	7	51	22	8	36	9	21	10	6	10	51
6	24	7	9	7	54	8	39	23	9	24	10	9	10	54	11	39
7	12	7	57	8	42	9	27	24	10	12	10	57	11	42	12	27
8	0	8	45	9	30	10	15	25	11	0	11	45	12	30	1	15
8	48	9	33	10	18	11	3	26	11	48	12	33	1	18	2	3
9	36	10	21	11	6	11	51	27	12	36	1	21	2	6	2	51
10	24	11	9	11	54	12	39	28	1	24	2	9	2	54	3	39
11	12	11	57	12	42	1	27	29	2	12	2	57	3	42	4	27
12	0	12	45	1	30	2	15	30	3	0	3	45	4	30	5	15
North.		N b E		N n E		N e b N		☽	N		N e b E		E n E		E b N.	

Foy Lin. Hüber. weimot. Dertm. Plimot.	Briſto.	Milſo. Bridg water.	Portl. Peter. porte.	Age of the Moone.	Orkn. Pole. Orwel.	Diep. Lacx. Lenoys.	Boloig. Douer. Harwich Yarmot.	Calice.
Eaſt.	EbS.	EsE	SebE		SE	SebS	SsE	SbE
H. M.	H. M.	H. M.	H. M.	☽	H. M.	H. M.	H. M.	H. M.
6 48	7 33	8 18	9 3	1	9 48	10 33	11 18	12 3
7 36	8 21	9 6	9 51	2	10 36	11 21	12 6	12 51
8 24	9 9	9 54	10 39	3	11 24	12 9	12 54	1 39
9 12	9 57	10 42	11 27	4	12 12	12 57	1 42	2 27
10 0	10 45	11 30	12 15	5	1 0	1 45	2 30	3 15
10 48	11 33	12 18	1 3	6	1 48	2 33	3 18	4 3
11 36	12 21	1 6	1 51	7	2 36	3 21	4 6	4 51
12 24	1 9	1 54	2 39	8	3 24	4 9	4 54	5 39
1 12	1 57	2 42	3 27	9	4 12	4 57	5 42	6 27
2 0	2 45	3 30	4 15	10	5 0	5 45	6 30	7 15
2 48	3 33	4 18	5 3	11	5 48	6 33	7 18	8 3
3 36	4 21	5 6	5 51	12	6 36	7 21	8 6	8 51
4 24	5 9	5 54	6 39	13	7 24	8 9	8 54	9 39
5 12	5 57	6 42	7 27	14	8 12	8 57	9 42	10 27
6 0	6 45	7 30	8 15	15	9 0	9 45	10 30	11 15
6 48	7 33	8 18	9 3	16	9 48	10 33	11 18	12 3
7 36	8 21	9 6	9 51	17	10 36	11 21	12 6	12 51
8 24	9 9	9 54	10 39	18	11 24	12 9	12 54	1 39
9 12	9 57	10 42	11 27	19	12 12	12 57	1 42	2 27
10 0	10 45	11 30	12 15	20	1 0	1 45	2 30	3 15
10 48	11 33	12 18	1 3	21	1 48	2 33	3 18	4 3
11 36	12 21	1 6	1 51	22	2 36	3 21	4 6	4 51
12 24	1 9	1 54	2 39	23	3 24	4 9	4 54	5 39
1 12	1 57	2 42	3 27	24	4 12	4 57	5 42	6 27
2 0	2 45	3 30	4 15	25	5 0	5 45	6 30	7 15
2 48	3 33	4 18	5 3	26	5 48	6 33	7 18	8 3
3 36	4 21	5 6	5 51	27	6 36	7 21	8 6	8 51
4 24	5 9	5 54	6 39	28	7 24	8 9	8 54	9 39
5 12	5 57	6 42	7 27	29	8 12	8 57	9 42	10 27
6 0	6 45	7 30	8 15	30	9 0	9 45	10 30	11 15
VVeſt.	wbn	wnw	nwbw	☽	nw	nwbn	nnw	nbw

When you will know the full Sea, seeke out the name of the place, where you desire the full water, in the head of the tables: Or learne the points of the Compasse there noted: Or if you list, know of some Mariner, what Moone maketh a full sea there: a Southwest or South Moone. &c. Then the age of the Moone found vnder the place or point of the compasse, sheweth in right order the houre and Minute of the full Water. The Ebbe then is manifest.

Ensample.

I desire to know the Full water at London bridge, the yere of our Lord 1555. the 6. day of Februarp. I finde by Rules before put forth, the 6. daye of Februarp, the yere aforesayde, the Moone to be 14. dayes old. I see also vnder the title wher London is S. M. which letters signifie that a Southwest Moone maketh a Full Sea there, and that is at two of the clocke, and xii. minutes past. This is wel perceyued in the first Table before put forth, if you runne downe to the 14 day of the age of the Moone, vnder London title.

A Note of the houre of the day and night.

The ingenious may gather nere about the houre of the daye and night, by the Moone consideracion had of the points in those Tables of tides before noted. For the houre is orderly put vnder the pointes of the compasse.

Euery part or point containing 11. degrees and $\frac{1}{4}$: this Compasse is wel figured nere about the Centre in the instrument following for the night houre, because ye may by it haue a delectable large vse of these tide Tables.

How by the first of the tide Tables, ye may redily know when the Moone commeth vnto the South, when she riseth and setteth: with her continuance on the earth.

Seeke the age of the Moone (as is opened) then resorte to the first Tide table lokinge oute ꝑ age there: So vnder ꝑ South point in right order the houre appeareth, when she commeth vnto the South. Then hath she spent halfe ꝑ arke ꝑ the Sunne would haue had in that signe, which pulled away sheweth ꝑ rysing, that halfe arke also added to her cõming vnto the South, declareth her going downe. The arke then that ꝑ Sunne would haue had in the signe, is her continuance on the earth.

A Ta-

¶ A Table at all times plainly and briefly declaring the breke of the day: the houre and minute of the Sunne ryning, the iust length of the day, the length of the night also, the very minute of the Sunne setting: and the Twylight.

Moneths	Dayes.	Break of the day.	Sunne ryſinge.	Lengthe of the day	Legthe of the night	Sunne ſettinge.	Twy-lyghte.	Dayes.	Moneths.	Minutes to be added to the Ligth of the daye.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.			
Iaan.	10	6 0	8 11	7 37	16 23	3 49	6 0	10		
	20	5 58	8 10	7 40	16 20	3 50	6 2	1		
Febr.	1	5 54	8 0	8 0	16 0	4 0	6 6	20		
	10	5 44	7 49	8 21	15 39	4 11	6 16	10		
	20	5 35	7 34	8 52	15 8	4 26	6 25	1		
Mar.	1	5 15	7 13	9 34	14 26	4 47	6 45	20		
	10	5 0	6 56	10 8	13 52	5 4	7 0	10		
	20	4 50	6 36	10 47	13 13	5 24	7 10	1		
Apr.	1	4 20	6 19	11 22	12 38	5 41	7 40	20		
	10	4 0	6 1	11 58	12 2	5 59	8 0	10		
	20	3 40	5 41	12 37	11 23	6 19	8 20	1		
May.	1	3 8	5 18	13 23	10 37	6 42	8 52	20		
	10	2 40	5 1	13 57	10 3	6 59	9 20	10		
	20	2 10	4 43	14 33	9 27	7 17	9 50	1		
Iun.	1	1 30	4 25	15 9	8 51	7 35	10 30	20		
	10	0 30	4 12	15 35	8 25	7 48	11 30	10		
	20	Cõtinu:	0	15 59	8 1	8 0		1		
Iul.	1	all day.	51	16 17	7 43	8 9	Day con tinuall.	20	Iul.	
	10		48	16 23	7 37	8 12		10		
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.			

The vſe of this table.

Conſider the Moneth and day, that ye require any of the toforeſayd: and ſeke in this Table that ſame under the title: procede in ryght ordre ſo ye haue your purpoſe. If the uery day be not founde, take the neareſt of your table. ¶ Or by proportion the truthe is geuen: whiche all by Enſample folowyng ſhall playnly be declared.

Ensample.

The firste day of January. I desyre all the aforesayd. ẏ is, the breake of the daye: the very minute of the Sunne rysinge, the length of the day, & also of the night, the Sūne goinge downe, and the twilight. I finde on the right hand of January, these numbers runninge downe. 1. 10. 20. which declare the first day, the 10: day, and twenty of ẏ Moneth, Now to my purpose, I requyre the breake of the day. &c. The first of January, in ẏ table, vnder that title, on the right hand of this figure. 1. I see 5 houres and 54. minutes that is 6 of the cloke wantinge 6 minutes: the rising of the sunne in ẏ order, is iust at 8 at this figures 8 there declareth vnder that title in the rowe. The length of the day. 8. houres, the length of the night 16 houres, the Sunne setting is at 4. the twilight, at 6 and 6 minutes. Euen thus for the tenthe day, and also for the twenty of that Moneth, in the rowes accordinge to their titles in the head of my tables.

Howe to worke by proportion, when the daye is not founde.

I Would knowe al th'aforesaid, the first day of January. I take for ensample the breake of the day Remember the first day of January, I did finde the breake, to be at 5 of the clocke, and. 54. minute: and the tenth day I may finde the breake of ẏ day to be at 5 and 44 minutes, ẏ is 10 minutes lesse. I see now 10 daies do geue me 10 minutes lesse. I say therfore by proportion the fifth day must geue 5 minutes lesse thē 5 houres 54 minuts whych is 5 houres 49 minutes my request, Thus for all the other titles.

The houre of the night, by the Moone, is otherwise founde then before, and that diuersly.

Hovve by the Moone, the night houre is founde.

THe houre of her risinge knowen as is opened. & a marke thē made wher she shadoweth in any true fired or mouable sūne Dial, the houres and minuts from that marke al the night after, are to be added to her risinge If more then. 12. surmount, only that aboue. 12. sheeweth the true houre and minute. If at the rising she may not be sene, then by the Sunne rysing, in ẏ derye Signe (with the help of this Almanack) you may perceiue what houre she would note at her rising. Therfore from ẏ mark cōut.

An other vvaye.

When the Mone is at the ful, looke what houre her shadowe sheweth in any Dial, that is the houre of ꝑ night. After she be past the ful. 28. houres, ye must adde one houre. But afore the full, pul one from ꝑ ye finde in the dial. If twise. 28. two houres &c. So haue ye the houre of the night.

Howve the houre of the day by Right shadowve, that is by any thinge directly standing vp is knowven. and by squyre shadowve also.

FIrst it behoueth you to haue a staffe, or any other thynge deuided in. 12. equall partes. When ye list to haue the houre set vp directly your deuided staffe, on a plain leuel grounde or bourd &c. Note the iuste length of that shadowe, what parte it containeth. With those entre your Moneth in the Peculiar Kalẽder folowing, beholding diligẽtly vnder the name of ꝑ Moneth, the smal enclosed tables: cõsidering wel, which of those smal tables are nereste vnto your day: and that iudge by the signe or day ther noted. That table serueth your purpose: where you must looke out the parts of the shadow afore found, or nere vnto it vnder or ouer the which the houre is set, before or after noone. Note that two pricks ther signify half a part more thẽ is noted: one prike, half a part lesse. Here it is also to be noted, that euery table hath within two rowes of figures, the vpper is for ꝑ staffe, the other for the squire shadow. And whatsoeuer is before sayd of the one that same is ment here of the other, sauinge of the compostion. The squire must be deuided from the inward angle to the ende of one syde, in. 12. equal parts, euen so from that angle th'other syde into. 24. like parts as this figure sheweth.

These to the witty suffise.

The Composition of an Instrument for the houre of the night which is also a parfect Dyal for the day and excelent for the Mariner.

TO the takinge of an altitude supposed, I could exactly inough (and that without an Instrumẽt) satisfye. For want of that knowledge make vpon a plaine bourde or rather fine plate a cycle: the bigger the better, part it into. 360. portions.

The

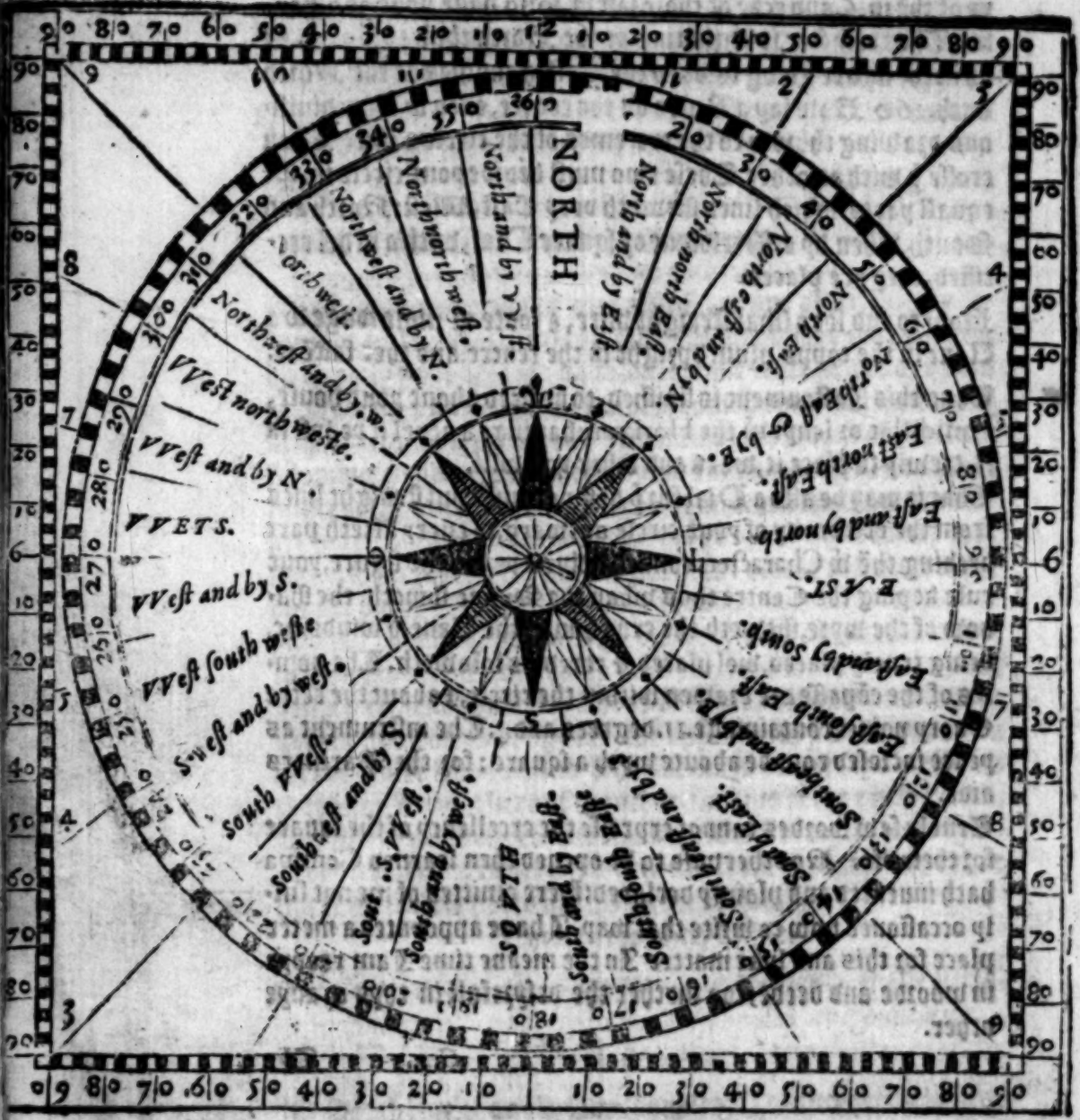
The Circle made diuide it in 6. not mouing the cõpasse: thẽ euery of thẽ in. 6. and eche of those last in. 10: so haue poue. 390. partes. Then caracter, it beginning at the Nozth thus 10. 20. 30. &c as in the figure going toward the East, endinge at the Nozth with. 360. Now lay a Ruler on the centre, euen wt some diuisions, dzawing thozow to the extremes of the circle a line. Then crosse ẏ with an other. These two must deuide your circle in. 4. equall parts: which lines sheweth very East, West: Nozth and South, when by a Meridiane oz square Dial, with a nedel rectified, they are placed.

Now to end set a smal straight wire, a foote oz mozelonge wt a Uane in the toppe, plum vpzight in the centre, and ther fastẽ it.

Thus this Instrument is finished, to be fixed about your house, Equidistãt oz leuel wt the Horizon: hauinge a nedel ẏe lyst in it, trewly to place it, when and wher you will.

That it may be also a Dial foz ẏ day, you must pul straight lines from the extremity of your circle outward, to euery fiftẽth part decking thẽ wt Characters conueniẽtly as ye see the figure, your rule keping the Centre thus whan the Sunne shineth, the shadow of the wyze, sheweth the true houre: the Uane, ẏ winds. &c. being truely placed, wel placed, & rered, as foloweth. The pointes of the cõpasse are drawen within the circle, & about the cẽtre Euery poinct containinge. 11. degrees and ½. The instrument as ye see inclosed rounde aboute wyth a square: foz the Mariners aide.

Truely few wozdes cannot expresse the excellency of the square foz their vse. No other wise to be opened then learned Gemma hath inuented and plainly declared: Here omitted of me not fully occasioned now to wzite that way. I haue appoynted a meter place foz this and lyke matter In the meane time I am readye in wooze and deede, too further the delyzefull in toys oz anye other.



Beholde this Instrument for nauigation most cõmodious, the vse of vvhich is here only put forth according to my Inuention.

The right rering and placing of the Dial tofore mencioned.

LIft vp handsomely your Instrument or Dial toward the North in some meete place, the side of a squyre lyinge on it, vntyll the plumet & line, rẽtred in the extreme vpper part of the other side of your squire like longe, cut al ẏ squire side, which lieth on your Instrumẽt, ẏ fifth part only except: Then moue your Instrumẽt, hither & thither, this or that way, vntill the shadowe at the wyre fall vpon the houre of the daye, keping diligently your height before: your dial thus fixed declareth al the yere long, the exact houre & parts thereof. No Dial in truth excelleth this. Haue in remẽbraunce, that this instrument must lye leuell, nothinge at all rered, for the houre of the night by starre.

In vvinter the contrarye superficies or plain shevveth the daye houre frõ ♎ to ♈

¶ To get the exact houre by two Starres of the first light, with an Instrument or Circle, to fore deuided, first of me inuẽted, calculated and practised.

THe instrument, equidistantly set and placed, as is declared in the composition, ye ought to lay the edge of a ruler vnto the Wyre, the other nether end touching, the Instrument mouyng here and there, still touching the wyre, vntill eyther Starre doeth offer it self with that edge, and that by the Iudgement of ẏ eye. Then put downe discretely your ruler (euer touching the wyre) the hinder end not moued, obseruing how many parts are cut from the North, to the edge of the ruler, Enter with them the Peculyar kalẽder folowing: sekinge out your Moneth, placed in the middes of euery table: then the day of ẏ moneth must be there founde.

Fit filo aut digito, absque regula exactissime.

Note that euery table hath on the sydes, the daies thus ordered. 1.5.10.15.20.25.30. Know ẏ order or rowe of fygures which is right against, or nerest your day serueth the turne. The numbre or parts before cut by the Ruler, and now foũde in ẏ row of your table, sheweth the precise houre. If it be to little, ẏ houre ouer the head or vnder is not yet come: if contrarye, it is past.

Howve these twvo bright starres, being of the first lyght are found: the one called Aldebaran or oculus Tauri, the other Alramech.

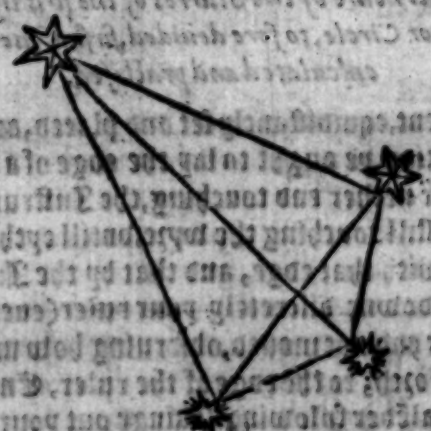
By vvhat meanes these Sterres are knovven.

The best way is thus: The Moneth and day knowen, with the true houre of the night, entre your table, consideringe that Moneth and daye observe what partes belongeth there to that sterre & houre. Then resort to your Instrument, laying the edge of your ruler, as many parts frō the North. Eastward: circumspectly liftinge vp ẏ edge, close by the wyre so the layre Starre shineth euen with that edge.

Or thus Groselye.

Another vvay to finde them

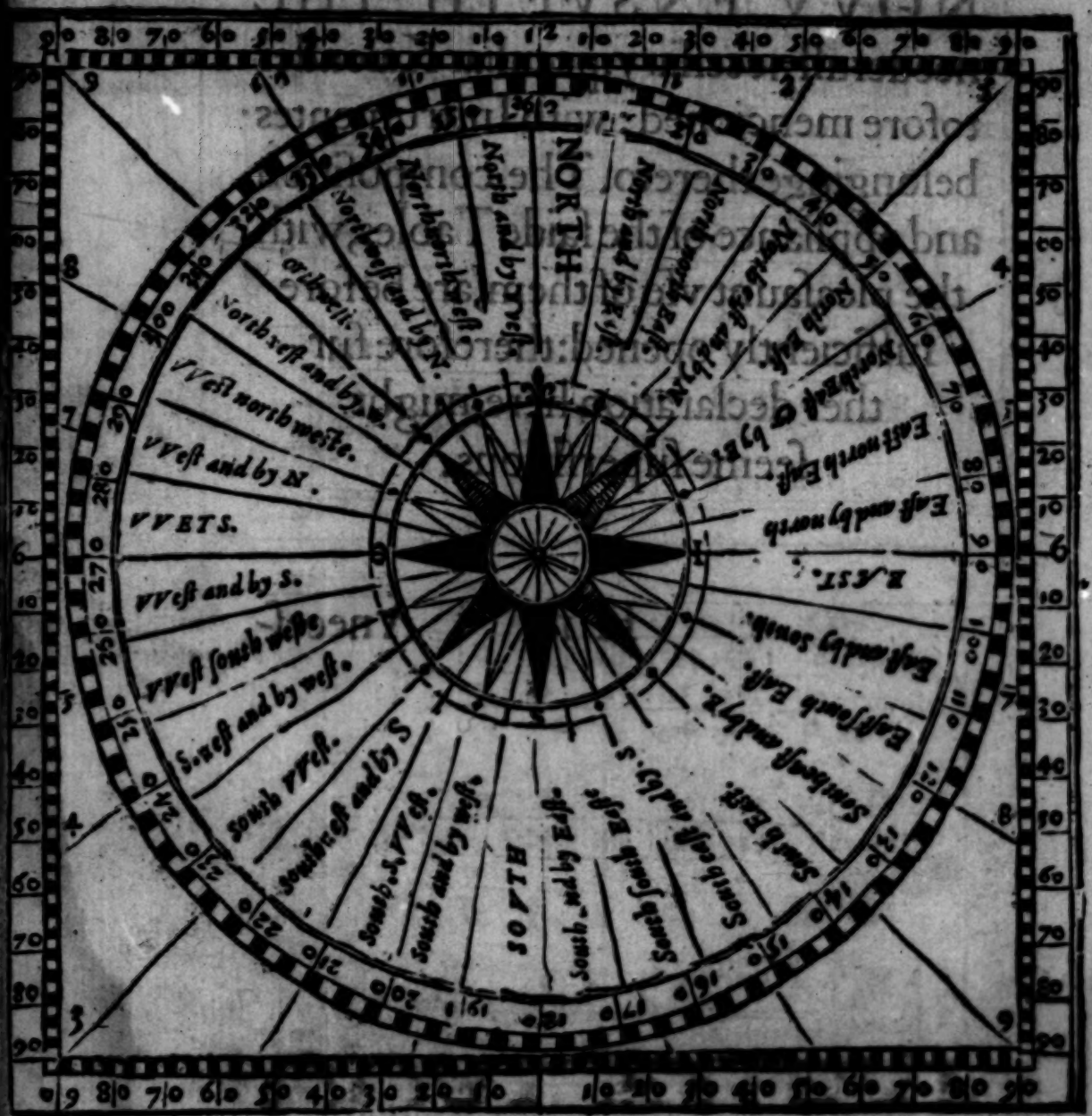
OCulus Tauri is euer a meate rodde, and a halfe to the eye vnder the 7. Starres & somewhat North of them in the rising Alramech is contrary to him placed accompanied with three litle dimme Starres, a rod from him by the inducte of the sight in the forme of a Triangle thus.



Beholde this Figure, the greate Starre doth represente Alramech, the othe- three the Triangle, vvhich is placed alvvais vvith him, but commonly there dothe appeare but one Starre of the Triangle.

NOVV ENSVETH THE needefull necessary, peculiar Kalender tofore mencioned: with Instrumentes belonginge thereto. The composition and appliance of the saide Tables, with the pleasaunt vse of them, are before sufficiently opened: therefore further declaration here, might seeme superfluous.

A Necessary Instrument, to finde exactly, the houre of the day, and night diuers wayes, with with helpe of this Peculiar Kalendar.



	5	6	7	8	9	10	11	12	
1	108	123	142	165	190	214	59	71	
5	112	128	148	172	198	220	68	75	
10	128	136	158	182	206	228	67	78	Oculus
15	123	142	166	192	214	234	71	81	Tauri.
20	130	151	175	199	222	239	75	86	
25	186	158	183	208	228	244	79	90	Alramech.
30	242	165	192	215	234	249	82	94	

For the nyght. From midnight into day. From euening to midnight.

Ianuary hath xxxj. dayes.

82	93	105	121	142	168	198		1
85	96	110	127	150	177	205		5
89	101	116	134	157	187	214		10
93	105	122	141	169	193	223		15
98	111	128	150	179	207	230		20
102	116	135	159	190	216	236		25
105	122	144	168	168	298	223		30
1	2	3	4	5	6	7	8	Alramech.

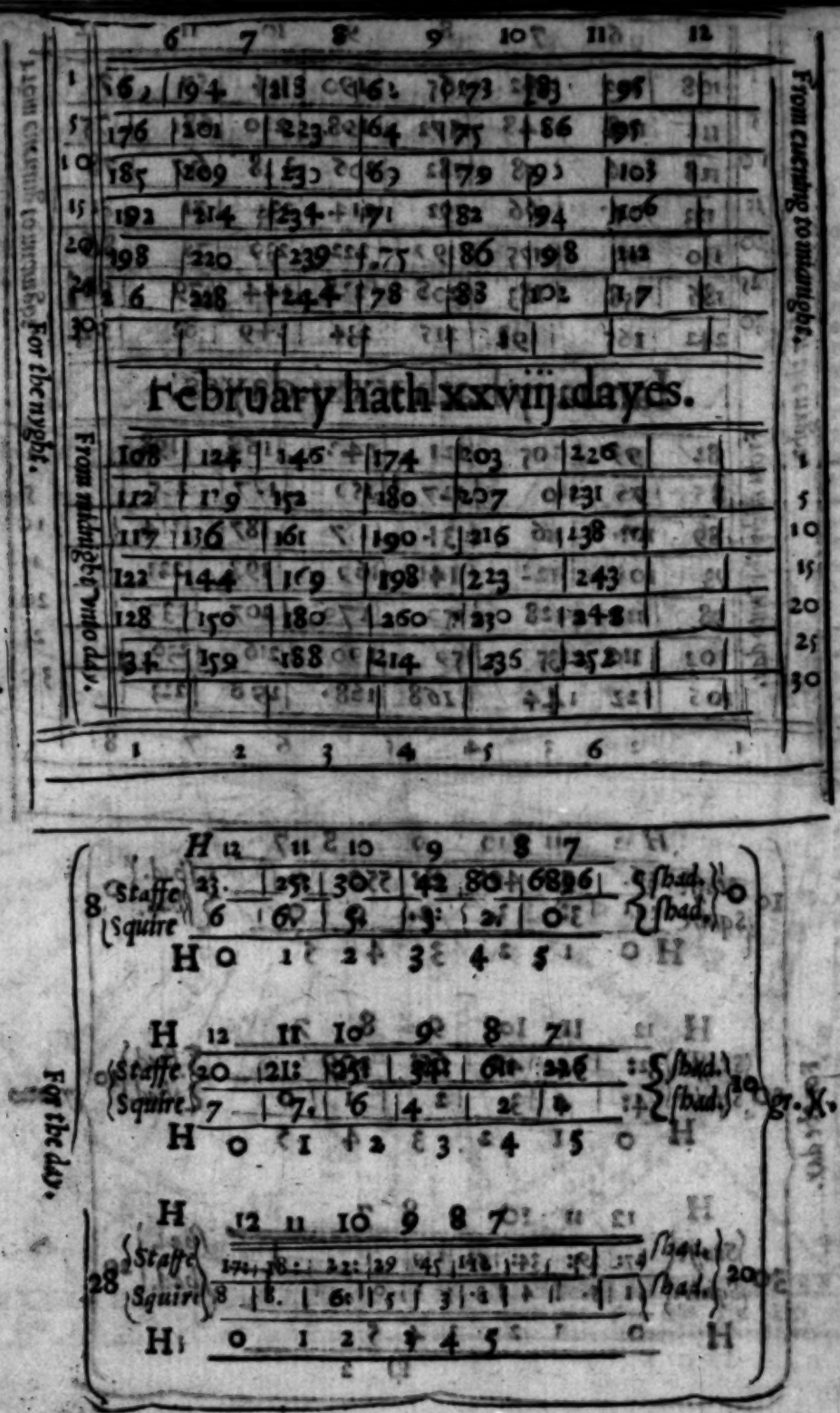
For the day.

		H 12	11	10	9	8	7		
10	Staffe	36	39	49	81	550	0	shad.	0
	Squire	41	3	3	2	0	0	shad.	
		H 0	1	2	3	4	5		

		H 12	11	10	9	8	7		
20	Staffe	32	34	48	65	209		shad.	10
	Squire	4	4	3	2	1	0	shad.	
		H 0	1	2	3	4	5		

		H 12	11	10	9	8	7		
30	Staffe	27	29	34	52	119		shad.	20
	Squire	51	5	4	3	1	0	shad.	
		H 0	1	2	3	4	5		

D 2



		6	7	8	9	10	11	12	
	1	6[illegible]	194	218	62	73	83	95	
	5	176	201	223	64	75	86	95	
Alramech.	10	185	209	230	69	79	90	103	
	15	192	214	234	71	82	94	106	
	20	198	220	239	75	86	98	112	
Oculus Tauri.	25	2[illegible]6	228	244	78	88	102	117	
	30								

From euening to midnight.

For the nyght.

February hath xxviij. dayes.

108	124	146	174	203	226		1
112	129	152	180	207	231		5
117	136	161	190	216	238		10
122	144	169	198	223	243		15
128	150	180	260	230	248		20
134	159	188	214	235	252		25
							30
1	2	3	4	5	6		

From midnight vnto day.

Alramech.

		H 12	11	10	9	8	7		
8	Staffe	23	25	30	42	80	6896	shad.	0
	Squire	6	6	5	3	2	0	shad.	
		H 0	1	2	3	4	5		

		H 12	11	10	9	8	7		
	Staffe	20	21	25	34	61	226	shad.	10 gr. X.
	Squire	7	7	6	4	2	4	shad.	
		H 0	1	2	3	4	5		

For the day.

		H 12	11	10	9	8	7		
28	Staffe	17	18	22	29	45	112	shad.	20
	Squire	8	8	6	5	3	1	shad.	
		H 0	1	2	3	4	5		

	7	8	9	10	11	12		
1	59	70	81	93	105	120		
5	62	72	84	95	108	124		
10	65	76	87	99	113	130		
15	69	80	91	103	118	136		
20	72	83	94	107	123	144		
25	75	86	98	112	128	150		
30	80	90	101	117	134	160		

March hath xxxi. dayes.

140	166	196	220	240				1
145	173	203	225	244				5
153	182	210	232	250				10
162	191	218	238	254				15
171	200	225	243	258				20
180	208	232	248	262				25
190	216	237	254	266				30
1	2	3	4	5	6			

From euening to midnight.

From midnight vnto day.

For the night.

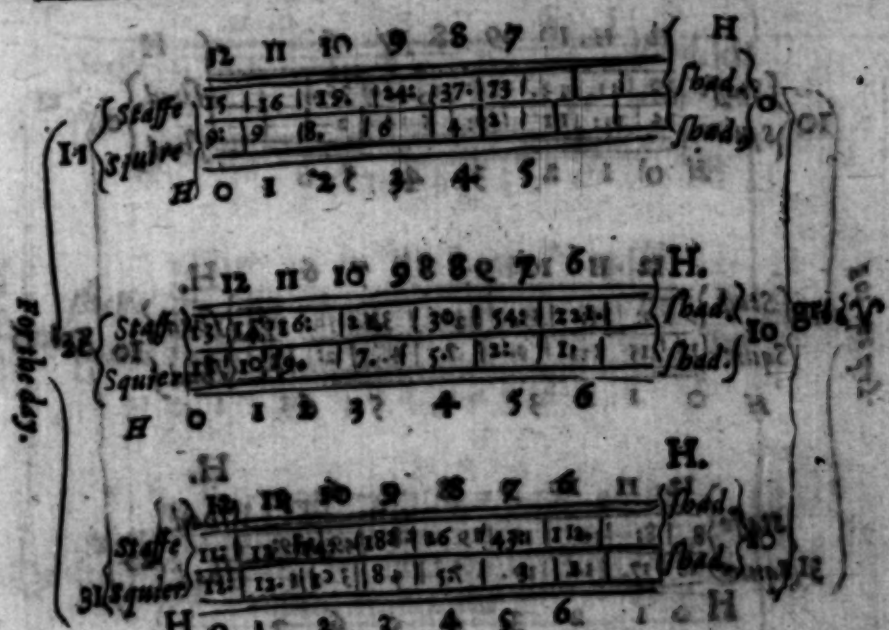
Almarech.

		12	11	10	9	8	7			H
11	Staffe	15	16	19.	24:	37.	73			shad.
	Squire	9:	9	18.	6	4	2			shad.
	H	0	1	2	3	4	5			

		12	11	10	9	8	7	6	H.	
28	Staff	13	14	16:	21	30	54:	221.	shad.	10
	Squier	18	10	19.	7.	5.	2:	1.	shad.	
	H	0	1	2	3	4	5	6		

		12	11	10	9	8	7	6	H.	
31	Staffe	11:	12	14	18	26	43	112.	shad.	10
	Squier	12:	12.	10	8	5	3	2	shad.	
	H	0	1	2	3	4	5	6		

For the day.



Alramech.

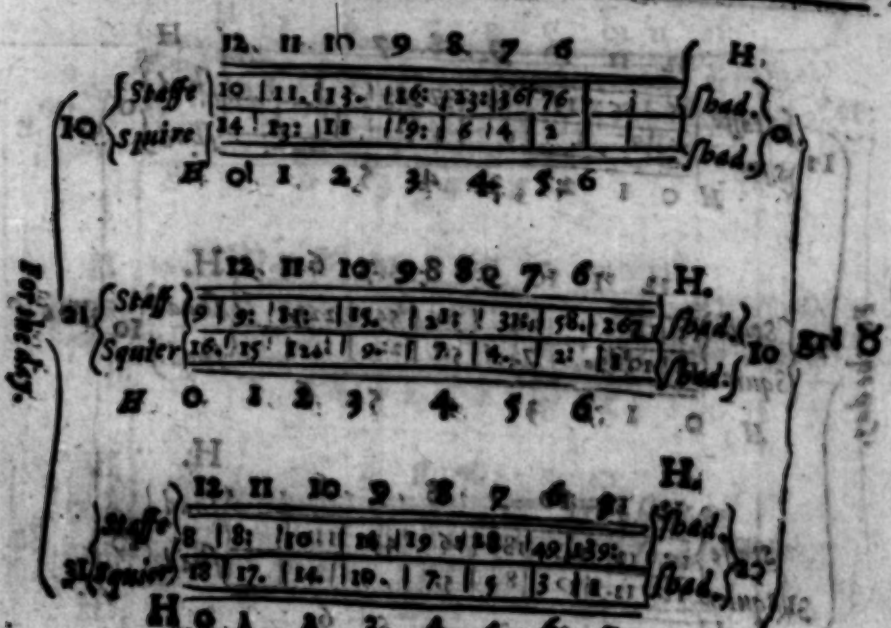
Alramech.

	8	9	10	11	12				
1	92	104	118	136	162				
5	94	106	122	143	172				
10	98	111	127	150	118				
15	101	116	134	158	178				
20	105	122	141	168	198				
25	111	126	150	177	206				
30	116	133	157	186	214				

For the nights. *From midnight vnto dayes.* *From euening to midnight.*

Aprill hath xxx. dayes.

	151	213	238	254					1
	199	224	243	257					5
	208	230	247	261					10
	214	236	252	265					15
	223	242	256	269					20
	230	247	260	273					25
	236	251	265	276					30
	1	2	3	4	5				



	8	9	10	11	12			
1	117	134	160	190	216			
5	120	140	165	195	220			
10	126	148	176	205	228			
15	134	156	186	213	235			
20	140	166	195	221	240			
25	148	175	205	230	246			
30	157	186	214	235	251			

May hath xxxi. dayes.

1	237	252	166	278				
5	240	255	168	280				
10	246	260	273	284				
15	252	264	276	287				
20	256	268	280	291				
25	260	272	284	294				
30	264	276	287	298				
	1	2	3	4	5			

From midnight vnto day. — *From euening to midnight.* — *For the nyght.*

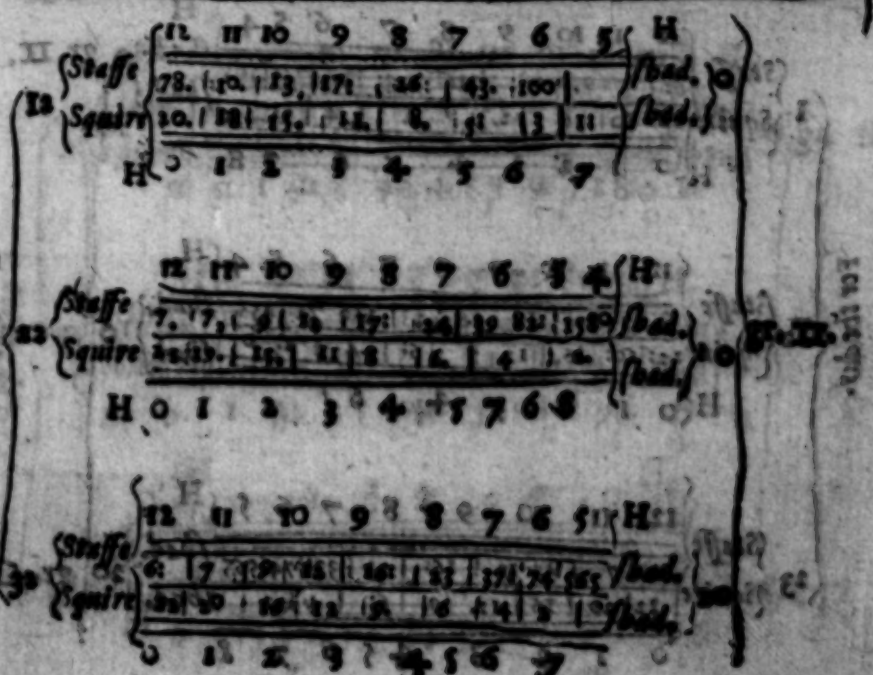
Almarech.

		12	11	10	9	8	7	6	5	H	
12	Staffe	78.	10.	13.	17.	26.	43.	100		shad.	0
	Squire	20.	18	15.	12.	8.	5.	3	11	shad.	
	H	0	1	2	3	4	5	6	7		

		12	11	10	9	8	7	6	5	4	H	
22	Staffe	7.	7.	9	12	17.	24	39	82.	158	shad.	0
	Squire	22	19.	15.	11	8	6.	4	2.		shad.	
	H	0	1	2	3	4	5	7	6	8		

		12	11	10	9	8	7	6	5	H	
32	Staffe	6.	7	9	12	16.	23	37.	74	565	shad.	0
	Squire	22	20	16	12	9	6	4	2		shad.	
		0	1	2	3	4	5	6	7			

For the day.



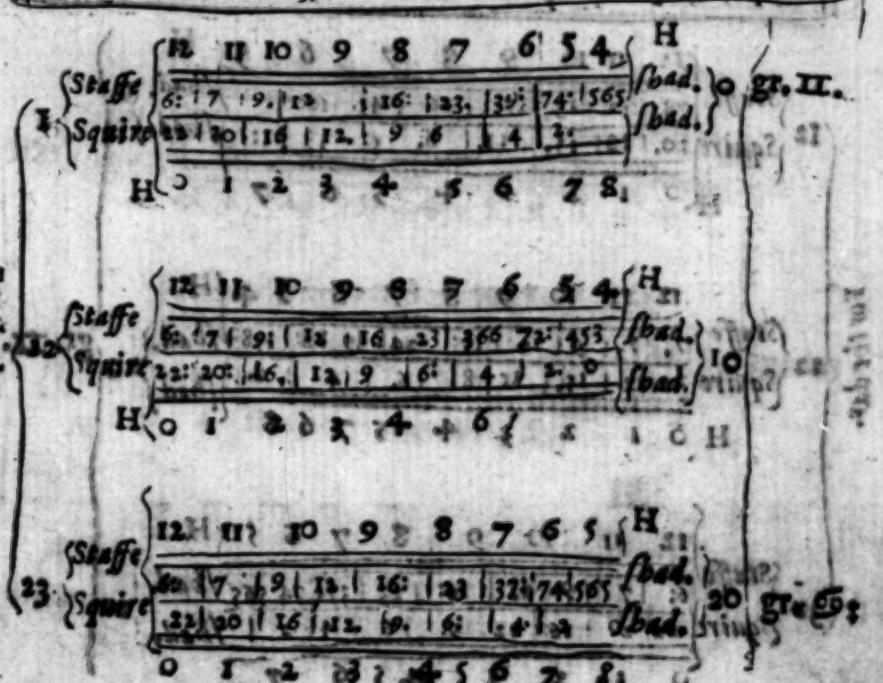
Alramech.

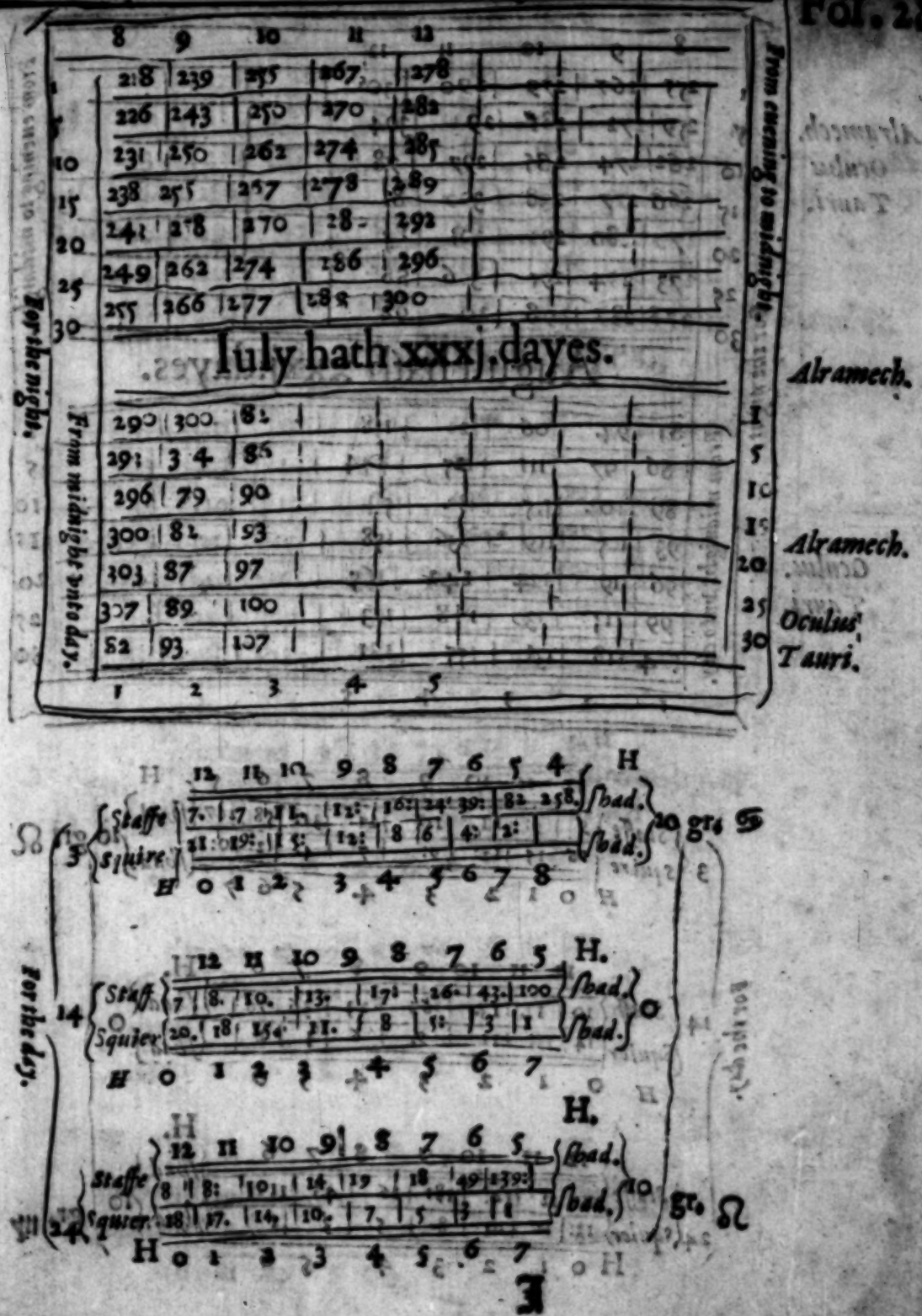
	8	9	10	11	12				
1	161	191	217	238	253				
5	169	200	225	243	258				
10	80	209	231	248	262				
15	109	216	237	253	266				
20	197	225	243	258	270				
25	209	232	249	262	274				
30	217	238	283	267	278				

For the nyght. — *From midnight vnto day.* — *From euening to midnight.*

Iune hath xxx. dayes.

267	278	290	300						1
270	280	292	303						5
274	285	296	307						10
278	288	300							15
281	292	303							20
285	296	308							25
289	300	312							30
1	2	3	4						




8 9 10 11 12
From euening to midnight.
For the night.
From midnight vnto day.
Iuly hath xxxj. dayes.
Alramech.
Alramech.
Oculus Tauri.
1 2 3 4 5
H 12 11 10 9 8 7 6 5 4 H
Staffe
Squire
shad.
shad.
gr.
H 0 1 2 3 4 5 6 7 8
H. 12 11 10 9 8 7 6 5 H.
Staff
Squier
For the day.
H 0 1 2 3 4 5 6 7
H. 12 11 10 9 8 7 6 5 H.
Staffe
Squier
gr.
H 0 1 2 3 4 5 6 7

Alramech. Oculus Tauri.

From euening to midnight. For the night.

	8	9	10	11	12				
1	255	267	279	290	301				
5	259	272	281	294	304				
10	262	274	285	297	78				
15	266	277	288	300	81				
20	270	280	292	303	85				
25	273	284	295	306	88				
30	278	287	298	30	92				

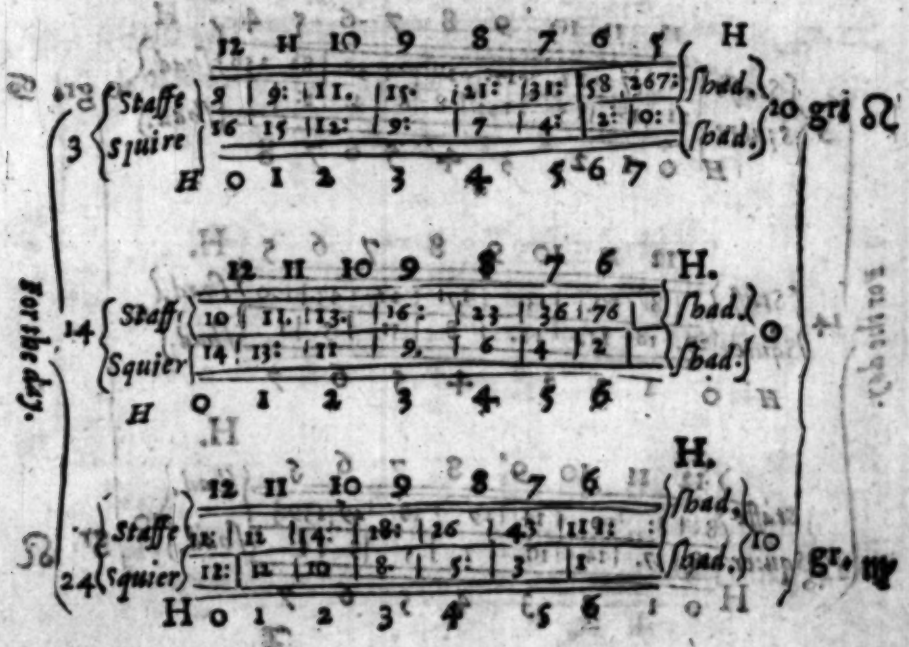
August hath xxxj. dayes.

From midnight vnto day.

1	83	94	106	121	138				
5	86	97	111	125	144				
10	89	102	115	132	151				
15	93	105	119	136	158				
20	96	119	124	142	165				
25	99	113	130	148	173				
30	104	118	135	155	181				
	1	2	3	4	5				

Oculus. Tauri.

From euening to midnight. For the day.



	7	8	9	10	11	12		
1	266	278	289	300	82	93		
5	270	280	291	303	84	96		
10	273	284	294	306	88	100		
15	276	286	298	80	92	104		
20	280	290	302	83	94	108		
25	284	294	305	87	99	114		
30	287	297	80	90	102	117		

From euening to midnight. — *Alramech.*

September hath xxx. dayes.

1	105	120	136	160	184			
5	109	123	142	165	191			
10	113	129	150	173	199			
15	117	135	155	180	205			
20	122	140	163	189	212			
25	128	147	171	197	219			
30	133	153	180	204	225			
	1	2	3	4	5	6		

From midnight vnto day. — *Alramech.* — *Oculus Tauri.*

For the nyght.

		12	11	10	9.	8	7	6		H	
3	Staffe	13	14	16:	21	30:	54	221		shad.	20 gr. ♍.
	Squire	11	10	9.	7.	5	3:	0		shad.	
	H	0	1	2	3	4	5	6			

For the day.

		12	11	10	9	8	7		H	
14	Staffe	15	16	19.	24:	37	73:		shad.	0
	Squire	9:	9	8.	6	4	2		shad.	
	H	0	1	2	3	4	5			

		12	11	10	9	8	7		H	
24	Staffe	17:	18:	22.	29.	45:	112		shad.	10 gr. ♎.
	Squire	8	8.	6:	5	3	1		shad.	
		0	1	2	3	4	5			

Alsamech.

Oculus Tauri.

Olulus Tauri.

	6	7	8	9	10	11	12	
1	276	288	298	80	91	104	117	
5	279	290	391	82	94	106	121	
10	283	293	304	86	93	111	126	
15	236	67	78	189	102	115	132	
20	289	70	81	93	106	120	138	
25	202	75	85	97	111	125	145	
30	296	78	88	102	117	131	152	

October hath xxxi. dayes.

	133	159	180	205	226	243		1
	138	162	186	210	231	247		5
	146	169	195	218	236	252		10
	152	177	202	224	242	256		15
	160	185	210	230	245	260		20
	168	193	216	235	250	263		25
	176	201	223	241	255	267		30
	1	2	3	4	5	6		

From euening to midnight.

From midnight vnto day.

For the nyght.

For the day.

4 Staffe: 12 11 10 9 8 7 — H; 20 shad. 20 gr. ♎.
Squire: 20 21: 25 34: 61: 226: — 7 7. 6. 4 2. 1 — shad.
H: 0 1 2 3 4 5

14 Staffe: 12 11 10 9 8 7 — H; 0 shad.
Squire: 23 25 30 42 79 68 69 — 9: 6. 5. 3 2 0 — shad.
H: 0 1 2 3 4 5

24 Staffe: 12 11 10 9 8 — H; 10 shad.
Squire: 27: 29 35: 52 119 — 5 5. 4: 3 1 — shad.
0 1 2 3 4

gr. ♏.

	5	6	7	8	9	10	11	12	
1	289	297	80	90	103	117	134	155	
5	290	301	82	94	105	122	138	162	*Alramech.*
10	294	305	87	98	111	126	146	170	
15	297	80	90	102	117	135	154	180	
20	301	83	94	107	122	140	165	188	*Oculus Tauri.*
25	306	87	99	113	128	147	173	198	
30	80	91	104	118	134	156	180	206	

From euening to midnight.

For the nyght.

Nouember hath xxx. dayes.

180	205	226	243	257	270	280	292	1	
187	211	231	247	260	272	284	295	5	
195	218	237	252	264	276	287		10	
204	225	243	255	268	280	192		15	
212	232	248	261	273	284	295		20	
220	238	253	266	277	288	227		25	*Oculus Tauri.*
228	244	258	270	280	293	132		30	
1	2	3	4	5	6	7	8		

From midnight unto day.

For the day.

	H	12	11	10	9	8			
2	Staffe	2:	34	42	65	209		shad.	20 gr. m.
	Squire	4:	4	3	2	1		shad.	
		0	1	2	3	4			
	H	12	11	10	9	8			
13	Staffe	36	39	49:	83	550		shad.	0
	Squire	4:	4	3	2	0		shad.	
	H	0	1	2	3	4			
	H	12	11	10	9				
22	Staffe	40:	45:	57:	104			shad.	10 gr. m.
	Squire	3:	3	2:	1:			shad.	
	H	0	1	2	3				

Oculus Tauri.

5	6	7	8	9	10	11	12	
81	92	105	119	135	156	183	203	1
84	96	109	123	144	165	192	214	5
88	100	114	136	150	175	201	223	10
93	105	120	135	160	185	209	230	15
98	111	126	145	168	195	218	236	20
102	116	132	153	177	203	225	242	25
106	221	138	152	186	211	231	247	30

For the nyght. *From midnight vnto day.* *From euening to mydnyght.*

December hath xxxi. dayes.

229	245	258	271	282	292	35	1
234	249	263	274	286	122	143	5
240	255	267	278	288	119	150	10
246	260	271	283	293	137	162	15
251	264	275	286	124	146	174	20
256	268	280	291	131	153	183	25
261	272	284	295	138	165	195	30

1 2 3 4 5 6 7

Oculus Tauri.

Alramech.

For the day.

H 12 11 10 9

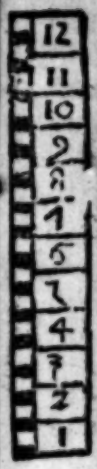
2 { Staffe 43: 47: 62: 122: } { shad. shad. } 20 gr.
{ Squire 3: 3 2 1 }

12 { Staffe 45. 49. 65. 1:1: } { shad. shad. } 0
{ Squire 3: 3 2 1 }

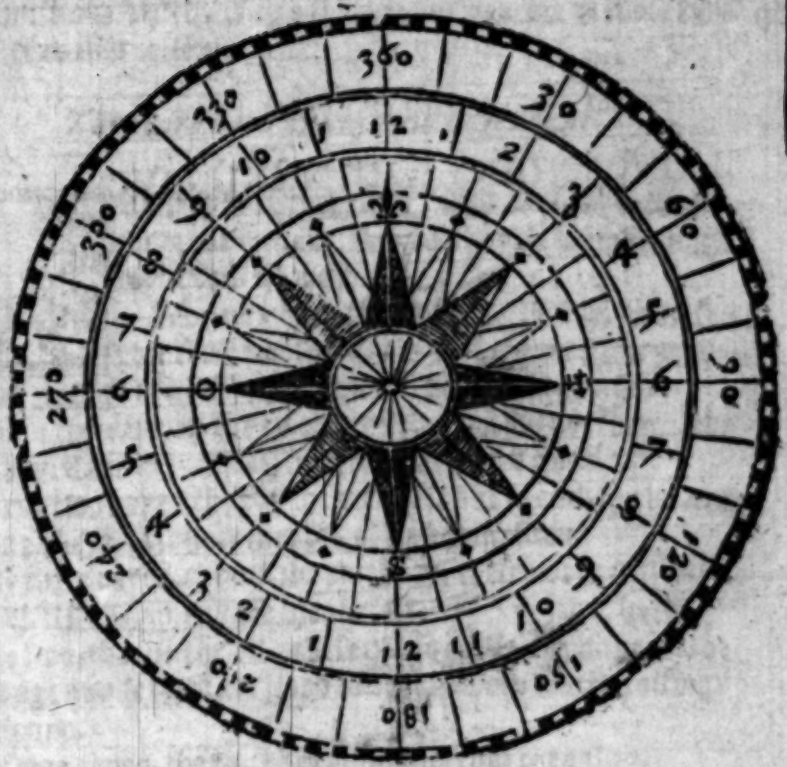
22 { Staffe 43: 47: 62: 122: } { shad. shad. } 10.
{ Squire 3: 3 2: 1: }

31 { Staffe 40: 45: 57 104 0 } { shad. h.sd. } 20 gr.
{ Squire 3: 3 2: 1: }

H 0 1 2 3



North



VVest

East.

South.

¶ Thus endeth the Peculiar Kalender, very commodious for the day and nighte houre. I haue here adioyned the Instrument without the Square, which may suffice, for the whole vse of the foresaid Kalender, with the helpe of the Squire and Staffe.

North
West
East
South.

I May not here omit a Kalender general deuided in ii. partes, whereof the firſt contayneth ſixe Monethes, from Januarye to June. The ſecond other ſixe monethes from July to December. In this Kalender are ſet forth the Feſtiuall dayes, the entring of the Sunne in the Signes Celeſtiall, the euill dayes noted with one Pyck. For a further declaracion of thoſe euill dayes, read this following.

The yeare hath xxxiij. euill dayes generall for euer.

IAnuary hath eight ſuch dayes, the i. the ii. the iiii. the v. the x. the xv. the xvii. the xix. Drinke white wyne this Moneth.

February hath three dayes, the viii. the x. the xvii. theſe not ſo euil, the xxvi the xxvii. the xxviii. Eate no potage of okes or malowes: They are venemous.

March three dayes, the xv. the xvi. the xix. this not ſo euil, the xxviii. day. This moneth, all ſweete meates are good.

Aprill two dayes, the xvi. the xxi. theſe not ſo euil, the vii. the viii. the x. the xx. Vſe hote meates, of light digeſtion.

May three dayes, the vii. the xv. the xx. theſe not ſo euill, the iii. the vi. Riſe early, and vſe breakefaſt.

Iune two, the iiii. the vii. theſe not ſo euill, the x. the xi. the xxii. Sage and lettuſe are good to eate, Cold water faſtinge hurteth not.

Iuly two dayes, the xv. the xx. abſtaine from carnalitye.

Auguſt two dayes, the xix. the xx. Theſe not ſo euill, the firſt the xxix. the xxx. It hurteth not to abſtaine from potage, and all hotte meates and drinckes of ſpicery.

September two dayes, the vi. the vii. theſe not ſo euill, the iii. the iiii. the xxi. the xxii. Eate good fruite.

October one daye, the vi. theſe not ſo euill the iiii. the xvi. the xviii. Good wyne is holſome this Moneth.

November two dayes, the xv. the xix. theſe not ſo euil, the v. & vi. the xxviii. the xxix. Bleue not.

December three dayes, the vi. the vii. the ix. theſe dayes not ſo euill, the xv the xvii. the xxii. Bleue not ouer much. Warme not thy legges at the fyre.

The first part of the generall Kalendar: from Ianuarie to Iune.

Ianuarie.	Februarie.	March.	Dates	April.	May.	Iune.
:A Circũ. i.	d	d	1	g	b Phi. Iac.	e
:b	e Purifi.	e	2	A	c	f
c	f	f	3	b	d	g
:d	g	g	4	c	e	:A
:e	A	A	5	d	f	b
f Epiph.	b	b	6	e	g	c
g	c	c	7	f	:A	:d
A	:d	d	8	g	b	e
b	e ☉ in ♓	e	9	A	c	f
:c	:f	f	10	b	d	g
d ☉ in ♒	g	g ☉ in ♈	11	c ☉ in ♉	e	A Barna.
e	A	A Spring.	12	d	f ☉ in ♊	b ☉ in ♋
f Hilar.	b	b	13	e	g	c Sumer.
g	c Valen.	c	14	f	A	d
:A	d	:d	15	g	:b	e
b	e	:e	16	:A	c	f
:c	:f	f	17	b	d	g
d	g	g	18	c	e	A
e	A	:A	19	d	f	b
f	b	b	20	e	:g	c
g	c	c	21	:f	A	d
A	d	d	22	g	b	e
b	e	e	23	A Georg.	c	f
c	f Matth.	f	24	b	d	g Iohan.
d Cõ. Pau.	g	g Anun.	25	c Marc.	e	A
e	A	A	25	d	f	b
f	b	b	27	e	g	c
g	c	c	28	f	A	d
:A		d	29	g	b	e Pe. Pa.
b		e	30	A	c	f
c		f	31		d	

The seconde part of the generall Kalender: from Iulie to December.

Iuly.	August.	Septemb.	Dayes	October.	Novem.	Decem.
g	.c Pet. Vin.	f	1	A	d Om. ſa.	f
A	d	g	2	b	e Om. an.	g
b	e	.A	3	.c	f	A
c	f	.b	4	d	g	b
d	g	c	5	e	.A	c
e Dog beg.	A	:d	6	.f	.b	:d Nicol.
f	b	:e	7	g	c	:e
g	c	f Na. Ma.	8	A	d	f Cō. ma.
A	d	g	9	b	e	:g
b	e	A	10	c	f	A
c	f	b	11	d	g	b
d	g	c	12	e	A	c ⊙ in ♑
e	A	d	13	f	b ⊙ in ♐	d wynter.
f ⊙ in ♌	b ⊙ in ♍	e ⊙ in ♎	14	g ⊙ in ♏	e	e
g	c	f Herueſt.	15	A	:d	.f
A	d	g	16	b	e	g
b	e Dog end	A	17	c	.f	.A
c	f	b	18	d Luc.	g	b
d	:g	c	19	e	:A	c
:e	:A	d	20	f	b	d
f	b	.e Matbe.	21	g	c	e Tho. ap.
♑ Ma. mag.	c	f	22	A	d	f
A	d	g	23	b	e	g
b	e Bartho.	A	24	.c	f	A
c Luc. Apo.	f	b	25	d	g	b Na. do.
d	g	c	26	e	A	c Steph.
e	A	d	27	f	b	d Io. euā.
f	b	e	28	g St. Iud.	.c	e Innoce.
g	.c decol. Io.	f Micha.	29	A	.d	f Tho.
A	.d	g	30	b	e Andre.	g
b	e		31	c		A

Lo the briefe vse of this Generall Kalendar.

ENtre ẏ columpne where your Moneth is noted in the head, ye shall there finde running downe the columpne the Festiuall dayes of that Moneth, the entrie of the Sunne in the Celestiall signes, the euill dayes pricked, &c.

I would haue placed in this Kalender the Fayres and Termes also, but that can not remayne continuall true: For those that ensue mouable Feastes are moueable, and therefore maye haue no certaine place, For the Termes, note these preceptes folowing. The Fayres, shalbe declared by two Tables immediatly ensuing this Kalender Generall.

Hovv to knovv the Termes.

KNow therefore, that Easter Terme alwayes beginneth ẏ 18. day after Easter, reckening Easter daye for one: and endeth the Monday next after the Ascencion day.

Trinitie Terme beginneth the Fridaye nexte after Corpus Christi day: and endeth the wednesday fortnight after.

Michaelmas Terme beginneth the 9. or 10. day of October: and endeth the 28. or 29. of Nouember.

Hillary Terme beginneth the 23. or 24. day of Januarye: and endeth the 12. or 13 day of February.

FINIS.

A Table containyng the Moneth, Day, and Place of the principall Fayres of Englande: to be augmented at pleasure in order followyng.

The 6 day at Wynow, at Salisbery. The first of Lente at Exceter.	*Ianuary.*
The 2. day at Vache, at Maydstone. The 14. at Feuersame. On Ashwednesdaye, at Lichfielde, at Roydon, at Tamworth. The first monday in Lent, at Cisiter, at Abington. The 24. at Henley vppon Thames, at Tewkesbury.	*February.*
The 4. Sonday in Lent at Stanford, at Sudbery. The 5. Sonday at Grantam, at Salisbury, the Mōday before our Lady day at Wilbich Palme euen. The 13. at Wipe. The 25. at Northampton, at Great Chart at Maulden.	*Marche.*
The 5. day at Maltingford, The 7. at Darby. The 9. at Bickelsworth, at Billingworth, at Calam the Mondaye after. The 3. Sonday after Caster at Louth. The 23. at Charinge, at Ipswiche, at Amtill, at Dinigam, at Gilford, The 25. at Darby. The 26. at Tenterden.	*Aprill.*
The 1. day at Stowe the olde, at Reading, at Maydstone, at Leicester, at Chensford. The 8. day at Beuerly, Ascention day, at Birmingcham, at S. Foes, at Bishoppes Stafford, Whitsonday, at Kingstone vppon Thames. Trinitie Sonday, at Rowell, at Crandroke, the 19. day. The 27. day at Lenham.	*May.*
On Corpus Christi day, at Couentrie, S. Foes, at Bishop Stanforth, at Rosse, the 9. at Maydstone. The 11. at Dinigam. The 23. at Shrowsbury, at S. Albons, The 24. at Cambridge, at Glocester, at Lincolne, at Windsor, Colchester. The 29. at Moller Hampton, at Peterborow. The 17. at Folkstone. The 24. at Peritam. The 28. at Petersine.	*Iune.*

A table

A Table contayning the Moneth, day, and Place of the principall Faires of England: to be augmented at pleasure in order followving.

Iuly. The 11. day horsefayre at Partney, at Nabor, at Felix: the 12. day at Lin. The 2. at Pinchbacke. The 17. at Winchcom. The 20. at Uxsbridge, at Cattesby. The 22. at Marborowe, at Winchester, at Colchester, at Tetbery. The 25. at Bristow, at Douer, at Chilbā, at Ipswitch, at Northamptō, at Darby, at s. James by Londō, at Reading at Louth, at Macksbery.

August. The 1. day at Feuersame, at Dōstable, at S. Edes, at Budforth at Marrā Church, at Wisbich. The 6. at Rūney. The 10. at Bedford, at Fernā, at Strodes, at Blakamore S. Lau. at Walton. The 24. at London, at Tewxsberye, at Sudberye, at Norwich, at Northalertō, at Douer, at Rie. the 28. at Ashford.

September. The 8. day at Cābridge, at Sturbridge, at Lōdon in Southwark, at Smide, at Recoluer, at Partney iii. Lady dayes. The 14. at Waltam Abbie, at Wotton vnder hedge, at Smalding. The 21. at Croydon, at Hulden in Holdernes, at S. Edmondsbery, at Maulton, at S. Iues, at Haldy Lanam, at Wyltemal, at Sittingborow, at Douer, at Estrie. The 29. day at Canterbury.

October. The 6. day at S. Sithes besides Norwitch. The 13. at Graues end, at Wfdsor, at Marchfeld. The 18. at Elie, at Stanetō, at Charing. The 23. at Harford, at Cititer, at Newmarket.

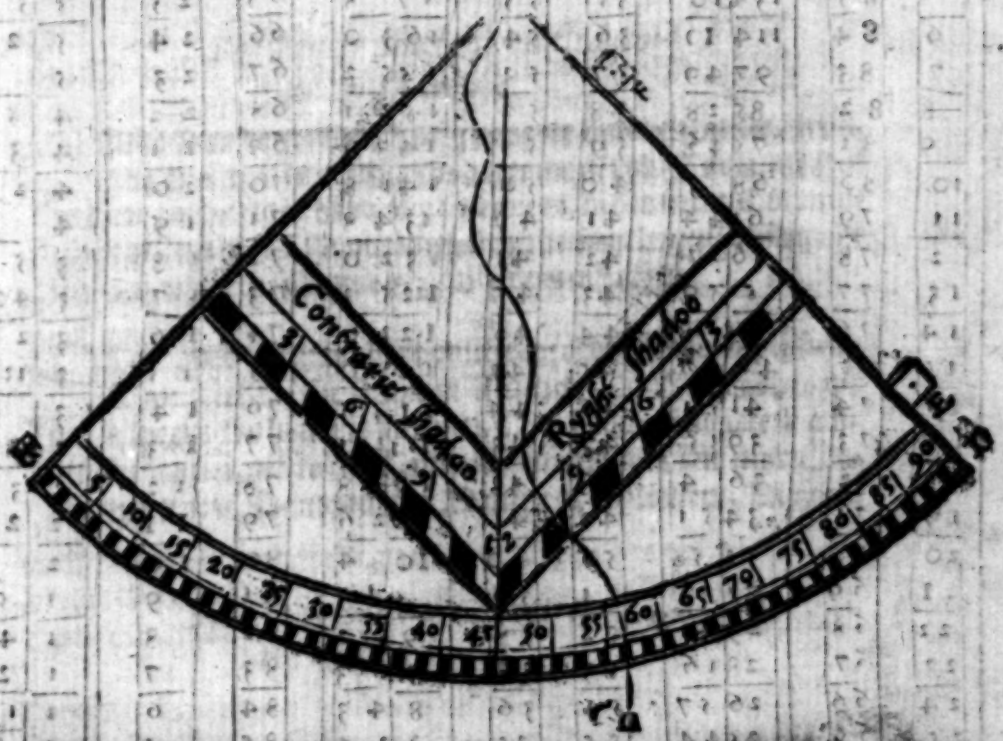
Nouember The 2. day at Kingstone, at Blechingly. The 6 at Newport ponde, at Standly. The 11. at Douer. The 13 at S. Edmondsbery. The 20. at Hythe. The 23. at Sandwiche. The 30. at Rochester, at Maydenhead.

December. The 29. at Canterbury. The 5. at Pluckley. The 6. at Spalding. The 7. at Sanderst.

A Ta

BEcause I vnderstand many are desirous how to get exactly the iust length of Staffe & Squier shadow before treated of, vppon vnlevell grounds, or other wayes, wheresoever it be, yea without either Squier or Staffe. I haue calculated a Table folowing, thorowly satisfying them, so that they get the height of the Sunne any way, or as I shall now instruct.

Behold this Instrument called a Quadrant the iust fourth parte of a Circle, even such a Circle as I taught you before to make for the right Diall, containing the fourth part of his diuisions, which is 90. degrees, onely ii. sights and a plume line added, to be placed at the beginning of this booke as ye may there: and here see: I haue here also put the Scale to the Quadrãt, which serueth well for shadowes, and as well for heights. The vse of this Scale is declared in my booke called Tectonicon.



LIft vp handsomly your Quadrãt the Sunne beames perfling þ sights. The Plumet & Line then at liberty falling, noteth there the degrees of height at that present, vpon the which that shall enter this Table immediatly following, to get them, and in like maner at all other times þ iust shadow of þ Staffe or Squier.

Howe by this Instrumẽt to get þ height of the Sunne at all times.

A Table

A Table generall of Shadowes, right and contrary; for euery grade of the Sunnes heyght: The thinge causing Shadowe, supposed 12 partes.

Heyght of the Sunne.		Staffe. Shadow.		Heyghte of the Sunne.		Staffe. Shadow.		Heyghte of the Sunne.		Staffe. Shadowe.	
G	g	P	M	G	G	P	M	G	g	P	M
0	90	[illegible]	[illegible]	30	60	10	47	60	30	6	56
1	89	63	34	31	59	19	58	61	29	6	39
2	88	343	43	32	58	19	12	62	28	6	23
3	87	228	59	33	57	18	29	63	27	6	7
4	86	171	37	34	56	17	47	64	26	5	51
	85	137	10	35	55	17	8	65	25	5	36
6	84	114	10	36	54	16	30	66	24	5	21
7	83	97	49	37	53	15	52	67	23	5	6
8	82	85	28	38	52	15	21	68	22	4	51
9	81	75	46	39	51	14	49	69	21	4	36
10	80	68	3	40	50	14	18	70	20	4	22
11	79	61	44	41	49	13	48	71	19	4	8
2	78	56	27	42	48	13	20	72	18	3	54
13	77	51	59	43	47	12	52	73	17	3	40
14	76	48	8	44	46	12	26	74	16	3	26
15	75	44	7	45	45	12	0	75	15	3	13
16	74	41	51	46	44	11	35	76	14	3	0
17	73	39	15	47	43	11	11	77	13	2	46
18	72	36	4	48	42	10	48	78	12	2	32
19	71	34	51	49	41	10	26	79	11	2	20
20	70	32	58	50	40	10	4	80	10	2	7
21	69	31	16	51	39	9	43	81	9	1	54
22	68	29	42	52	38	9	22	82	8	1	41
23	67	28	16	53	37	9	3	83	7	1	28
24	66	26	57	54	36	8	43	84	6	1	16
25	65	25	44	55	35	8	24	85	5	1	3
26	64	24	37	56	34	8	6	86	4	0	50
27	63	23	[illegible]	57	33	7	48	87	3	0	38
28	62	22	34	58	32	7	30	88	2	0	25
29	61	21	10	59	31	7	13	89	1	0	12
30	60	20	45	60	30	6	56	90	0	0	0
Heyght of the Sune.		Squier. Shadow		Heyht of the Sunne		Squier. Shadow.		Heyght of the Sune.		Squyer. Shadow	

The vse of this Table, and Staffe Shadowe.

Ensample.

I Suppose the height of the Sunne taken by the Quadrãt 34 degrees, now I require the exacte length of Staffe & Squire Shadow. For right shadowe, first seeke out the degrees in the lefte parte of the Table, and vnder this title the height of the Sunne: if they be not in that left rowe downewards, resorte to the nexte rowe and like title, vntill ye finde the degrees, then in right order towarde the right hande, in the nexte Columne vnder the title of Staffe Shadowe, are 17. partes, and 47. minutes, your desire.

For Squier Shadowe, titled contrary Shadowe.

SEeke your degrees in the right parte vpward, at this title, Height of the Sunne, in the bottome of this Table, thē shal ye finde on the right hand of 34. degrees, in the nexte Columne eight partes and 6. Minutes: that is the very length of Squier shadow, when the Sunne is 34. degrees in height.

OCcasioned I cannot here omitte an other Table faythfully supputated for the Sunnes Altitude, by the which with quick speede the houre is knowen. This Table conducteth manifolde wayes, yea to the Composition of diuers and many Instrumentes: as Quadrauntes, Nauicles, Cylindres, Ringes. &c.

Beholde now vnto what ende, and also the briefe vse of it.

A Table of the Sunnes altitude, for euery houre the Pole mounted, 51. degrees 30. Minutes, exactely calculated.

Houres before n. / Houres after n.	12 / 1	11 / 2	10 / 3	9 / 4	8 / 5	7 / 6	6 / 7	5 / 8	4
☉	M g M	g M	g M	g M	g M	g M	g M	g M	g M
♑ 30 ♋ 0	62 0	59 43:	53 45	45 42:	36 42:	27 23:	18 11	9 28:	1 31.
25 5	61 54:								
20 10	61 37:	59 21.	53 26:	45 24.	36 25	27 6	17 54.	9 9.	1 13:
15 15	61 9:								
10 20	60 30:	58 17.	52 28	44 32	35 35	25 16.	17 3	8 16.	0 16:
5 25	59 41:								
♒ 0 ♌ 0	58 42	56 3 to	50 55:	43 6.	34 13.	24 56:	1; 41:	6. 10.	0 0
25 5	57 34.								
20 10	56 17:	54 15	48 48:	41 10.	32 22.	23 6.	13 50	4 55:	0 0
15 15	54 52:								
10 20	53 21:	51 26:	46 12:	38 46:	30 6.	20 52.	11 34.	2 34.	0
5 25	51 43:								
♓ 0 ♍ 0	50 0	48 11.	43 11.	35 59	27 2.	18 1.	8 59:	0 0	
25 5	48 12:								
20 10	46 20:	44 37.	39 51	32 53:	24 32.	15 27.	6 [illegible]	0 0	
15 15	44 25:								
10 20	42 23:	40 51:	35 18	29 34:	21 2:	12 25:	3 6.	0:	
5 25	40 20:								
♈ 0 ♎ 0	38 [illegible]	36 58	32 37.	26 7:	18 [illegible]	9 16.	0 0		
25 5	36 39								
20 10	34 32.	32 4	28 55:	22 38:	14 51:	6 7	0 0		
15 15	32 35.								
10 20	30 40.	29 15.	25 18	19 14:	11 33	3 21	0		
5 25	28 [illegible]								
♉ 0 ♏ 0	27 0	25 40	21 51:	15 59:	8 34.	0 6.			
25 5	25 17.								
20 10	23 37	22 22.	18 42:	13 21	5 45:	0 0			
15 15	22 8.								
10 20	20 43.	19 29	15 55.	10 23:	3 17	0			
5 25	19 26:					0			
♊ 0 ♐ 0	18 18.	17 6	13 38:	7 3:	1 15.				
25 5	17 19.								
20 10	15 30.	14 48:	11 55	6 35:	0 0				
15 15	5 51.								
10 20	15 23.	14 13:	10 52:	5 35.	0				
5 25	15 6.								

When the Sunne entreth the 12 grade of ♋ he toucheth our Horizon in the morninge Entring the 12 of ♑ he ryseth at 8 in the first of ♑ at 7. Note in all my tables, one pr[illegible] Sowing the Minutes diminish betwixt two augmented sums make quantity.

The briefe vse of this Table.

SUppose the heighte of the Sunne taken by the Quadrante, eight degrees and 13. Minutes, the Sunne being in the beginning of Aquary or Sagittarie, I seeke and finde in this Table and in the Rowe which directly aunswereth ♒ and ♐ 8. degrees and 13 Minutes: that is agreeable to 9. or 3. of the clocke in the head of this Table. Therfore I pronounce that when the Sunne was 8. degrees and 13. Minutes in heighte, entringe ♒ or ♐ it was precise 9. of the clocke in the morninge, or 3. at after Noone. Thus at all times yee maye knowe the iuste houre.

Ye may also conclude the heighte of the Sunne at all times, the place of the Sunne knowen, and the houre. Note when the precise nombers either of heighte, or degree of the Sunne are not founde in the Table, then make proportion according to ꝑ difference. &c. Practise better then many wordes openeth this. Now to ende this matter, this followinge to him that hath tasted these knowledges I write.

Dato loco Solis & eius Altitudine, horam ipsam calculare.

DVc sinum inuente solaris Altitudinis, in sinum arcus semidiurni, & productum diuide per sinũ Altitudinis Meridianæ eiusdem Solis, & prouenientis inde partium numeri sumito arcum, quem tandem in horas vertas: Collectus horarum numerus quesitam indicabit horam: ab ortu quidem Solis, si altitudo fuerit ante meridiana, vel ab occasu, si eadem Solis Altitudo acciderit post Meridiem.

NOwe hauing some occasion I coulde here adioyne a briefe supputacion Sinicall, touchinge moste workinges Astronomicall, but howe farre that passeth the capacitie of the common sorte of men, they that be craueyled know. For this cause I leaue to giue any preceptes this waye: restringe prouocation meete to haue to doe in the like: then God sufferinge my penne

shall not stay to open ready chosen generall wayes, for pleasant Astronomicall operation.

HEre shall now followe briefly collected certayne rules performed before by Tables: but now done by quicke supputacion, to be had in memory, by that auoydinge carryage or burden of bookes.

A way to get the Golden number or Prime without a Table.

ADde vnto the yeare of our Lorde 1. then deuide that summe by 19. the remayne is the Prime or Golden nomber.

The Epact is thus euer found.

MUltiply ỳ Prime by 11. deuide by 30. the remaine is your desire. These two nombers beginne at March, there is chiefly to finde out the Chaunge, Quarters, and ful Moone as ensueth.

A Rule for the Chaunge, Full and Quarters of the Moone.

PUt vnto the Epact al the monethes from March, including the Moneth of March: pull then that summe from 30. the remayne sheweth the daye of the chaunge.

Here note the full Moone is the 15. daye after the chaunge. Also if the remaine be lesse then 15. subtracte that lesse from 15. the rest is the full Moone.

If the remayne passe 30. subtract it frō 45. then the full doth also appeare.

To conclude, if frō the ful Moone ye pul 15. dayes, you haue the chaunge going before. The chaunge had, the Quarters are knowen by adding or pulling away 7. dayes.

For the

For the age of the Moone, vvorke thus for euer.

ADde to the dayes of your moneth the Epacte, and also as manye dayes more as are Monethes from Marche to the Moneth, including both Monethes. Now subtract 30. if ye may the age then remayneth.

Nowv shalbe declared vvhat Signes and degrees the Moone differreth from the Sunne, by vvhich is gathered at all times the Signe and Grade vvherein she is.

MUltiplye the age of the Moone by 4. deuide by 10. the Quotiente sheweth the Signes that the Moone differeth from the Sunne. The remayne augmented by three bringeth degrees to be added. Ye must put these Signes and degrees to the place of the Sunne: the producte, I meane the increase or ende of all these Signes and Degrees, in order counted from ꝑ Sunne, declare the place of the Moone in the Zodiake.

The place of the Sunne in the Zodiake is thus founde.

FIrst know that the xi. daye of Ianuary, the Sunne is entred ♒ the x. day of February ♓. The xi. of March ♈. The xi. of Aprill ♉. The xii. of May ♊. The xii. of Iune ♋. The xiiii. of Iuly ♌. The xiiii. of August ♍. The xiiii. of September ♎. The xiiii. of October ♏. The 13. of November ♐. The xii. of December ♑.

This knowen, the place of the Sunne is wel founde, adding for euery day past an entyre degree.

Ensam-

Ensample.

I Require the place of ye Sunne the 21. day of August. I finde that the Sunne is entered in ♍. the 14. day of the Moneth. I must for euery day past any entrey adde i. degree. There are 7. dayes paste that entrey, then I conclude the Sunne readye to haue place in the 8. degree of ♍ the 21. of August.

To knovv hovv long the Moone shineth.

FOr her shining, in the encrease multiply the age of ye Moone by 4. In the Wane augment the reste of the age which shee lacketh of 30. by 4. and deuide by 5. the Quotiente sheweth the houres: the remaynes if there be any, multiplied by 12. bringeth minutes to be added.

Hovve the moueable Feastes are founde readily.

SEeke the chaunge of the Moone in Februarye, for that yeare ye require these Moueable feastes. Note what day it falleth on the next tuesday is Shrouetuesday. But if ye chaunge be on tuesday, then the nexte tuesday ensuinge is it. The nexte Sonday is the first Sonday of Lente. Sixe Sondayes after is Easter daye. Adde 35. dayes or 5. weekes to Easter daye, yee haue Rogacion Sondaye. To that adde 4. dayes, so haue yee Ascention daye. Then haue ye 10. dayes to Whitsontide. Seuen dayes after is Trinity sonday. And foure dayes after is Corpus Christi day.

VVithout Tables at all times to knovv the Tydes.

I Earne as is declared the age of the Moone, also remember the houre of the full, or chaung for your place or point which doth neuer vary, these knowen worke thus.

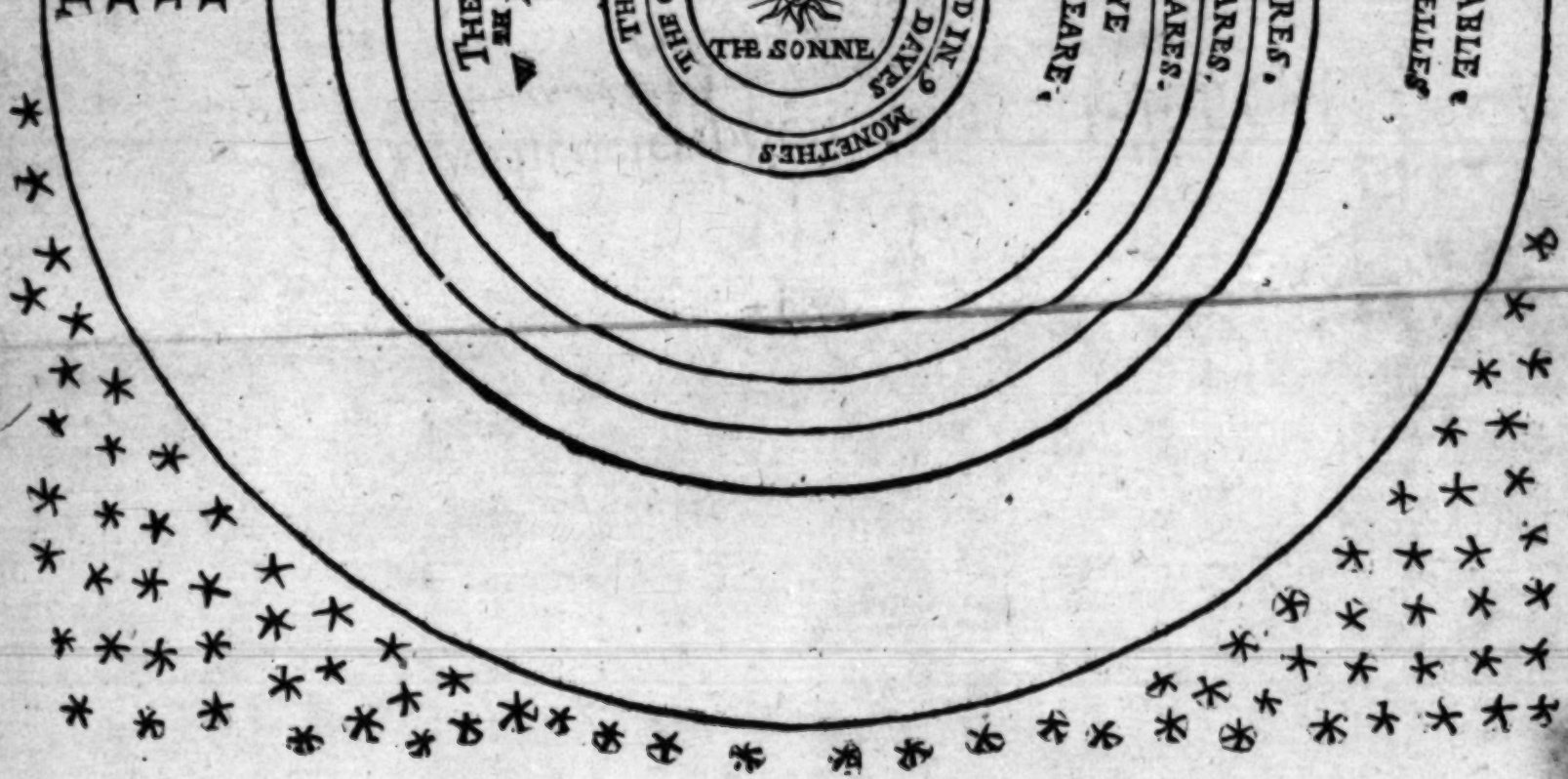
Ensam-

Ensample.

VVhen the Moone is 10. dayes olde, I desire to knowe at what of the cloche it is ful Sea at Londō bridge. Multiplye 10. by 48. so haue yee 480. deuide that by 60. yee haue 8. houres. To that adde 3 which is the houre of the ful or chaūge appointed for that place. All then commeth vnto 11. of the clock high water at London bright. If any thinge remaine they are Minutes of an houre. If the houres amounte aboue 12. cast the twelues away, the rest is your requeste.

FINIS.

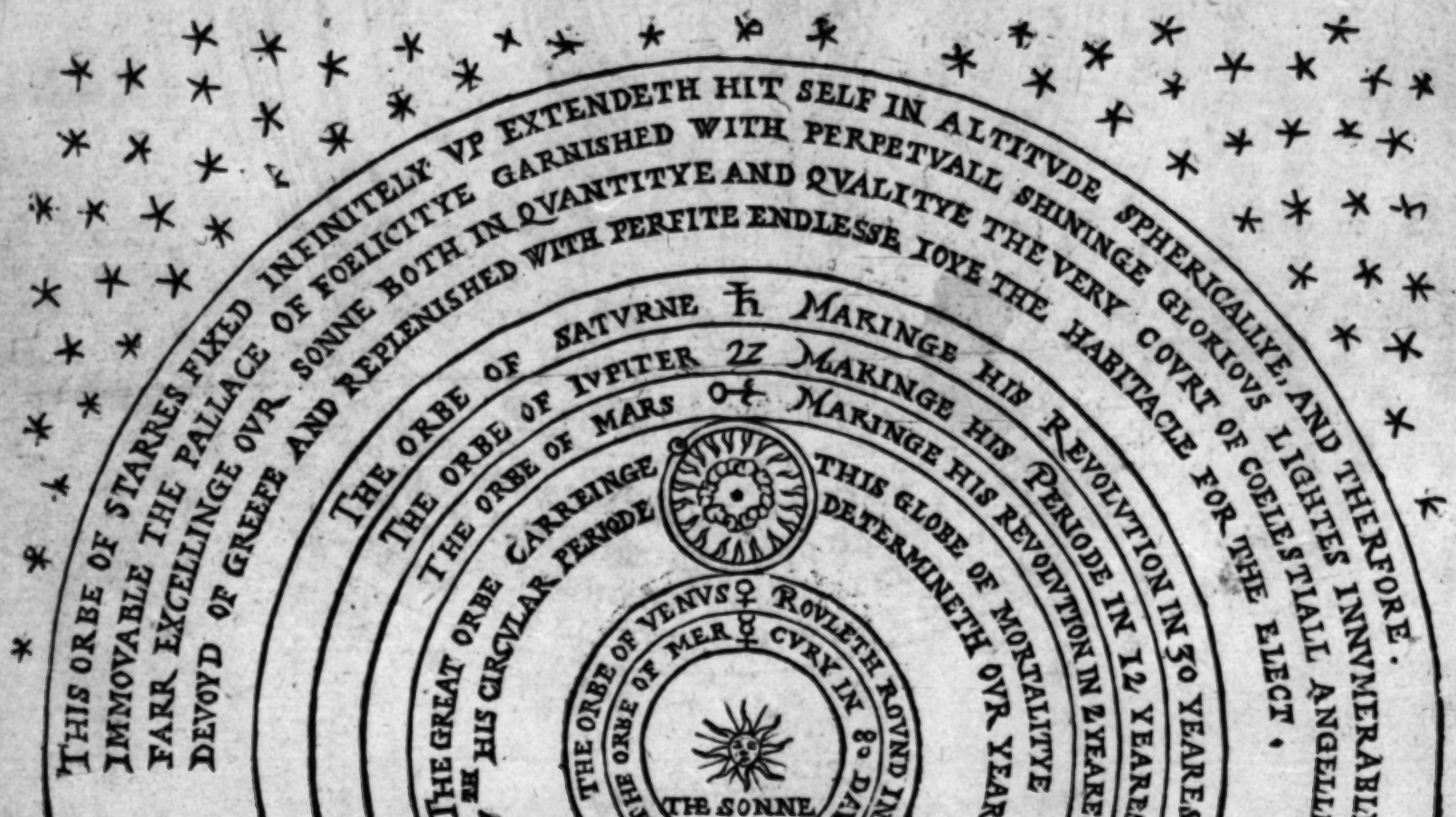
A Perfit

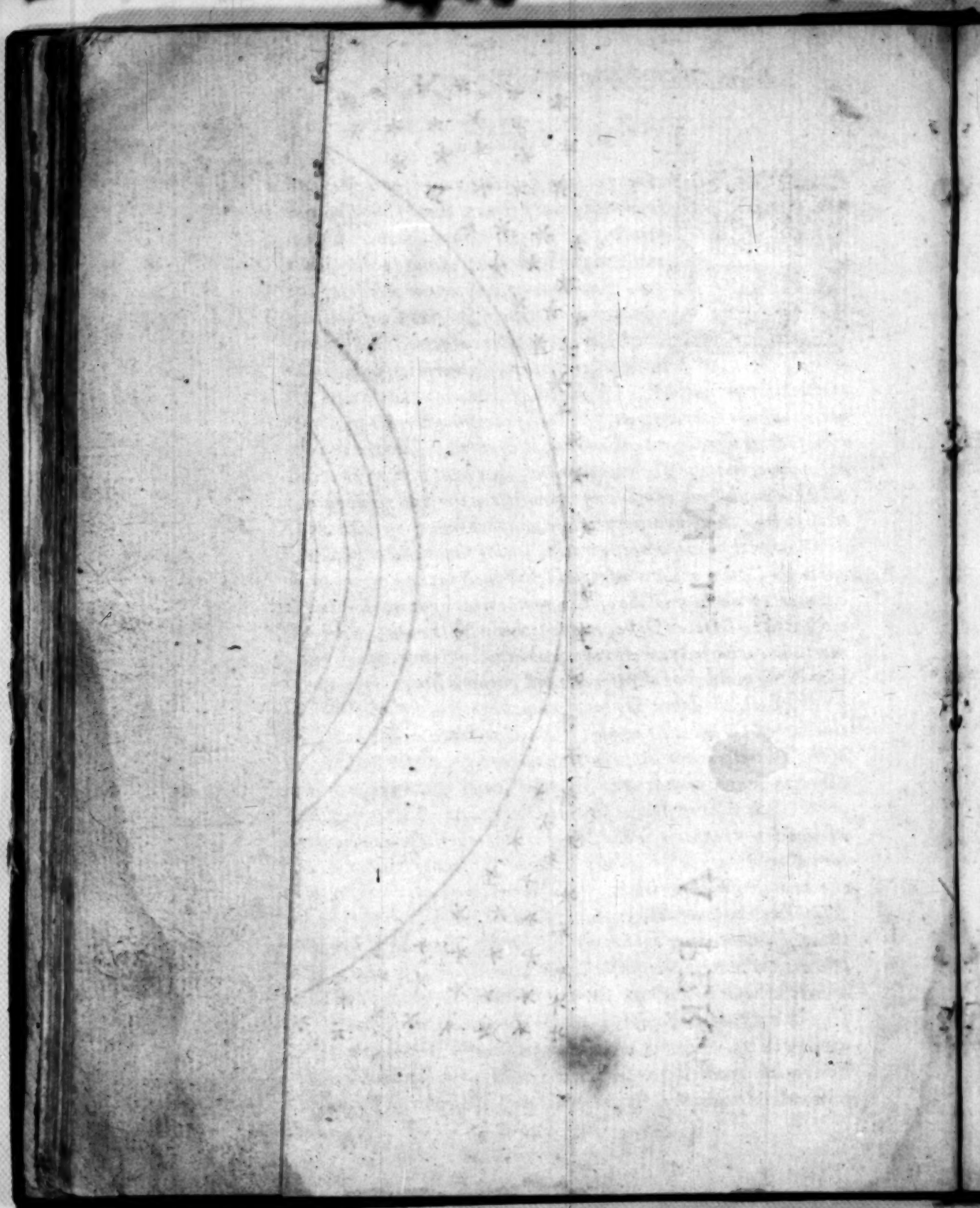


M. I. A PER-

A perfit descriptiõ of the Cæleſtiall Orbes,

according to the moſt auncient doctrine of the Pythagoreans. &c.





To the Reader.

HAuing of late (gentle Reader) corrected and reformed sondry faultes that by negligẽce in printing haue crept into my fathers Generall Prognostication: Amonge other thinges I founde a description or Modill of the world and situation of Spheres Cœlestiall and Elemẽtare according to the doctrine of Ptolome, wherevnto all Vniuersities (ledde therto chiefly by the auctoritie of Aristotle) sithens haue consented. But in this our age one rare witte (seing the continuall errors that from time to time more & more haue bin discouered, besides the infinite absurdities in their Theorickes, which they haue bin forced to admit that woulde not confesse any mobilitie in the ball of the earth) hath by long studie, painfull practise, and rare inuention deliuered a new Theorick or model of the world, shewing that the Earth resteth not in the Center of the whole world, but onely in the Center of this our mortall world or Globe of Elementes which enuironed and enclosed in the Moones Orbe, and together with the whole Globe of mortalitie is caried yearely rounde about the Sunne, which like a king in the middest of all raigneth and geeueth lawes of motion to the rest, spherically dispearsing his glorious beames of light through al this sacred Cœlestiall Temple. And the earth it selfe to be one of the Planets hauing his peculiar & straunge courses tourning euerye 24. houres rounde vpon his owne Center whereby the ☉ and great Globe of fixed starres seeme to sway about and tourne, albeit in deede they remaine fixed. So many wayes is the sense of mortall men abused, but reason and deepe discourse of witte hauing opened these things to Copernicus, & the same being with demõstrations Mathematicall most apparantly by him to the world deliuered. I thought it conuenient together with the olde Theorick also to publish his, to the ende such noble English minds (as delight to reache aboue the baser sort of men) might not be altogether defrauded of so noble a part of Philosophy. And to the ende it might manifestly appeare that Copernicus meante not as some haue fondly excused him to deliuer these grounds of the Earthes mobility onely as Mathematicall principles, fayned & not as Philosophicall truly auer-

red. I haue alſo from him deliuered both the Philoſophicall reaſons by Ariſtotle and others produced to maintaine the Earthes ſtability, and alſo their ſolutions and inſufficiency, wherein I cannot a litle commende the modeſtie of that graue Philoſopher Ariſtotle, who ſeing (no doubt) the inſufficiency of his owne reaſons in ſeeking to confute the Earthes motion, vſeth theſe words. De his explicatum eſt ea qua potuimus facultate howbeit his diſciples haue not with like ſobriety maintayned the ſame. Thus muche for my owne parte in this caſe I will onely ſay. There is no doubte but of a true grounde truer effects may be produced then of principles that are falſe, and of true principles falſhod or abſurditie cannot be inferred. If therefore the Earth be ſituate immoueable in the Center of the worlde, why finde we not Theorickes vppon that grounde to produce effects as true and certaine as theſe of Copernicus? VVhy caſt we not away thoſe Circulos Æquantes and motions irregulare, ſeinge our owne Philoſopher Ariſtotle himſelfe the light of our Vniuerſities hath taught vs: Simplicis corporis ſimplicem oportet eſſe motum. But if contrary it be founde, impoſſible (the Earthes ſtability being graunted) but that we muſt neceſſarily fall into theſe abſurdities, and cannot by any meane auoyde them. VVhy ſhall we ſo much dote in the apparance of our ſences, which many wayes may be abuſed, and not ſuffer our ſelues to be directed by the rule of Reaſon, which the greate GOD hath giuen vs as a Lampe to lighten the dareknes of our vnderſtandinge and the perfit guide to leade vs to the golden braunche of Verity amidde the forreſt of errours.

Behold a noble Queſtion to be of the Philoſophers and Mathematicians of our Vniuerſities argued not with childiſh Inuectiues but with graue reaſons Philoſophicall and irreproueable Demonſtrations Mathematicall. And let vs not in matters of reaſon be ledde away with auctority and opinions of men, but with the Stellifyed Poet let vs ſay,

Non quid Ariſtoteles vel quiuis dicat eorum
Dicta nihil moror, à vero cum forte recedunt,
Magni ſæpi viri mendacia magna loquuntur,
Nec quiſquam eſt adeo ſagax, quin ſæpius erret.

Ratio dux fida Sophorum.

THE

To the Reader.

THE Globe of Elemẽts encloſed in the Orbe of the Moone I call the Globe of Mortalitie becauſe it is the peculiare Empire of death. For aboue the Moone they feare not his force but as the Chriſtian Poet ſayth.

Omne quod eſt ſupra lunam, æternumq; bonumq;
Eſſe ſcias nec triſte aliquid Cæleſtia tangit.
Quicquid verò infra Lunæ conuexa creauit
Omniparens, natura, malum eſt, mortisq; ſeueras
Perpetitur leges & edaci abſumitur æuo.

Againe.

Omne malum eſt infra lunam, nox atra, procellæ,
Terribiles, frigus, calor, importuna ſenectus,
Pauperies maleſuada, labor, dolor, improbitas, Mors.
Suprà autem lunam, lucis ſunt omnia plena,
Nec non letitiæ & pacis, non tempus & error
Et MORS & ſenium eſt illic & inutile quicquam.
Fœlix ô nimium fœlix, cui ſedibus illis
Tam pulchris & tam iucundis tamq; beatis
Viuere conceſſum eſt, ſupremi munere Regis.

And againe.

Singula nonnulli credunt quoq; ſydera poſſe
Dici Orbes, TERRAMq; appellant ſydus opacũ
Cui minimus Diuũm præſit &c.

In the midſt of this Globe of Mortalitie hãgeth this darck ſtarre or ball of earth and water balanced and ſuſtained in the midſt of the thinne ayer onely with that propriety which the wõderfull workman hath giuen at the Creation to the Cẽter of this Globe with his magnetical force vehemently to draw and hale vnto it ſelf all ſuch other Elementall thinges as retaine the like nature. This ball euery 24. houres by naturall, vniforme and wonderfull ſlie & ſmoth motion rouleth rounde, making with his Periode our naturall daye. whereby it ſeemes to vs that the huge infinite immoueable Globe ſhould ſway and tourne about.

To the reader.

The Moones Orbe that enuironeth and contayneth this darcke ſtarre and the other mortall, chaungeable, corruptible Elements & Elementate things is alſo turned round euery 29. dayes 31. minuts 50. ſeconds, 8. thirds, 9. fourths, and 20. fifties, and this Periode may moſt aptly be called the Moneth. The reſt of the Planets motions appeere by the Picture and ſhal more largely be hereafter ſpoken of.

HEREIN good Reader, I haue waded farder then the vulgar ſorte Demõſtratiuè & Practicè, *& God ſparing life I meane though not as a Iudge to decide, yet at the Mathematicall barre in this caſe to pleade in ſuch ſorte, as it ſhall manifeſtly appeare to the VVorld whether it be poſſible vppon the Earthes ſtabilitie to deliuer any true or probable Theorick, & then referre the pronouncing of ſentence to the graue Senate of indifferent diſcreete Mathematicall Readers.*

Farewell and reſpect my trauaile as thou ſhalt ſee them tende to the aduauncement of truth and diſconeringe the Monſtrous lothſome ſhape of errour.

A Perfit

A PERFIT DESCRIPtion of the Cæleſtiall Orbes according to the moſt auncient doctrine of the *PYTHAGOREANS, latelye reuiued by COPERNICVS and by Geometricall Demonſtrations approued.*

Lthoughe in this moſt excellent and vſefvle parte of Philoſophye in all times haue bin ſondry opiniõs touchyng the ſituation and mouing of the bodies Celeſtiall, yet in certaine principles all Philoſophers of any accompte, of al ages haue agreed and cõſented. Firſt that the Orbe of the fixed ſtarres is of al other the moſte high, the fardeſt diſtante, and compreheudeth all the other ſpheres of wandringe ſtarres. And of theſe ſtrayinge bodyes called Planets the old philoſophers thought it a good grounde in reaſon ☽ the nigheſt to the center ſhoulde ſwyfteſt moone, becauſe the circle was leaſt and thereby the ſooner ouerpaſſed and the farder diſtant the more ſlowelye. Therefore as the Moone beinge ſwyfteſt in courſe is founde alſo by meaſure nygheſt, ſo haue all agreed ☽ the Orbe of ♄ being in mouinge the ſloweſt of al ☽ Planets, is alſo the higheſt: ♃ the nexte, and then ♂, but of ☿ ♀ ☉ ther hath bene great controuerſie, becauſe they ſtray not euery way from the Sũne as the reſt do. And therefore ſome haue placed them abone the Sũne as Plato in his Timæo: others beneath, as Ptolomy and the greater part of them ☽ folowed him. Alpetragius maketh ☿ abone the Sunne and ☉ beneath, and ſundry reaſons haue bene of al ſides alledged in defence of their opinions. They that folowe Plato (ſuppoſinge that all ſtarres ſhould haue obſcure & darcke bodyes ſhyninge with borrowed light like the Mone) haue alledged that yf thoſe Planets were lower then the Sun, then ſhould they ſometyme obſcure ſome

part of the body of the Sunne, and also shyne not with a lyght circulare but segmentary and that varyable as in the Moone: Which when they see by experience at no time to happen, they conclude with Plato. On the cõtrary part such as will mayntayn them beneath, frame a likelyhoode by reason of the large space betwene the Orbes of ☉ & ☾. For the greatest distance of the ☿ is but. 64. ½ semidiameters of the Earth & to the nighest of the Sunne are. 1160. so that there remayneth betwene ☿ ☾ and the ☉. 1095. semidiameters of the earth. And therfore ☿ so hudge a space should not remayne emptie, there they situate the Orbes of ♀ and ♀. And by the dystance of their Absides whereby they serche the thicknes of their Orbes they find that they of all the rest best aũswere that situation, so as the lowest of Mercuries Orbe may reache downe almost to the highest of the Moones, & the toppe of ♀ to the inferiour part of ♀ sphere, which with his Absis should reach almost vnto the Sunne.

For betwene the Absides of ♀ by their Theoricks they supputate. 177. semidiameters of the earth and then the crassitude of ♀ Orbe beinge. 910. semidiameters doth very nyghe supplye and fill the residue. They therefore will not confesse that these Planets haue any obscuritye in their bodyes lyke the Moone, but that either with their owne proper light or els beinge thoroughly persed with solare beames they shine and shewe Circulare. And hauinge a straynge course of latitude they seldom passe betwene the Sunne and vs, or yf they should their bodyes beinge so small coulde scarcelye hyde the hundred parte of the Sunne, and so small a spot in so noble a lighte could hardly bee discerned. And yet Auerrois in his Paraphrasis on Ptolomey affyrmeth that he sawe a litle spot in the Sũne at such time as by Calculation he had forecast a coppozall Coniunction. But howe weake this their reason is, it maye soone appeare if wee consider howe from the earth to the lowest of the Mones Orbe there is. 38. semidiameters of the earth or by the truer computation accordinge to Copernicus. 52. and yet in all ☿ so hudge a space we know nothinge but the aire or fiery Orbe if any such be. Againe the Diameter of the circle whereby ♀ should be caried nighe. 45. graues distant from the Sunne, must neades be 6. tymes greater at the least then the dystance of that circles lowest parte

weste parte from the Earth then yf that whole circle compre-
hended within the Orbe of ♀ should be tourned about the earth
(as neades it must) if we wil not attribute to the earth any mo-
tiõ we may easily consider what rule in the heauens so vaste &
huge an Epicicle, contepninge aspace so many times greater
then the earth aire & Orbes of ☽ Mone and ☿ also, will make,
especially being tourned round about ☽ earth. Againe ☽ reason
of Prolomey that the ☉ must neades bee placed in the middest
of those Planets that wander from him at liberty and those ☽
are as it were cõbined to him, is moued senseles by ☽ motiõ of the
Mone, whom we see no lesse to stray from the Sun then any of
those other three superiour Planets But yf they wyll neades
haue these two Planets Orbes within an Orbe of the Sune,
what reason can they geue why they should not departe from ☽
Sunne at lardge, as the other Planets dooe, consideringe the
increase of swiftnes in their motion must accõpany the inferio
situatiõ, or els ☽ whole order of Theoricks should be disturbed.
Yt is therefore euydent that eyther there muste be some other
Centre whereunto the order of these Orbes should be referred,
or els no reason in their order nor cause apparãt why we should
rather to ♄ then to ♃ or any of the rest attribute the higher or
remoter Orbe. And therefore seemeth it worthy of consideratiõ
that Martianus Capella wrote in hys Encyclopedia and cer-
tayne other latines held, affyrminge that ☾ and ☿ dooe runne
about the Sunne in their spheres peculiare, & therefore coulde
not strey farther from the ☉ then the capacity of their Orbes
would geue them leaue, because they encõpasse not the Earth
as the others dwe, but haue their Absides after an other mãer
conuersed, what other thinge would they hereby signify but ☽
the Orbes of these Planets should enuiron the Sunne as their
Center. So may the sphere of ☿ beinge not of haulfe the am-
plitude of ☾ Orbe, be well situate within ☽ same. And if in like
sorte we situate the Orbs of ♄ ♃ and ♂ referringe them as it
were to the same Center, so as they capacitye bee fatch as they
containe and circulate also the earth, happely we shal not erre,
as by euydente Demonstracions in the residue of Copernicus
Reuolutions is demonstrate. For it is apparante that these
Planets nigh the Sunne are alwayes least, and fardest distante

and oppolite are mutch greater in ſight & nigher to vs, wherby it cannot be but the centre of them is rather to the ☉ then to ☿ earth to be referred: as in the Orbes of ♀ and ♅ alſo. But yf all theſe to the Sunne as a centre in this manner bee referred, then muſt there neades betwene the conuex Orbe of ♀ and the concaue of ♂ an hudge ſpace be left wherein the earth & Elementare frame encloſed with the Lunare Orbe of duty muſt be ſituate. For from the earth the Moone may not be farre remooued, beynge wythout controuerſye of all other vpgheſt in place and nature to it: eſpecially cõſiderynge betwene the ſame Orbes of ♀ and ♂ there is roome ſufficient. Therefore neade we not to be aſhamed to confeſſe this whole globe of Elemẽts encloſed with the Moones ſphere together wyth the earth as the Centre of the ſame to be by this great Orbe together with the other Planets about the Sun tourned makinge by hys reuolution oure yeare. And what ſoeuer ſeeme to vs to proceede by the mouinge of the Sunne, the ſame to proceede in deede by the reuolution of the earth, the Sunne ſtill remaynge fixed & immoueable in the middeſt. And the diſtance of the earth frõ the Sunne to be ſutch as being compared with the other Planets maketh euidente alterations and diuerſity of Aſpects, but yf it be referred to the Orbe of ſtarres fixed, then hath it no pro portion ſenſible, but as a poinct or a Center to a circumferẽce, which I hould farre more reaſonable to be graũted, then to fal into ſutche an infinyte multitude of abſurde ymaginations, as they were fayne to admit that will neades wilfully mayntaine the earthes ſtabilitye in the Centre of the wꝛold. But rather herein to direct our ſelues by that wyſedome we ſee in al gods naturall wꝛorckes, where we may behould one thing rather endued with many vertues and effects, then anye ſuperfluous or vnneceſſarye part admitted. And all theſe thinges althoughe thei ſeeme hard ſtraũge & incredible, yet to any reaſonable man ỳ hath his vnderſtandinge ripened with Mathematicall demõſtration, Copernicus in hys Reuolutions accordinge to hys promiſe hath made them more euident and clear then ỳ Sun beames. Theſe groundes therefore admitted which no man reſonably can impugne, that the greater orbe requireth the longer tyme to runne his Periode: The orderly and moſt beutiful frame of the Heauens doeth enſue.

The

The first and highest of all is the immoueable sphere of fixed starres conteininge it self and all the Rest, and therefore fyxed: as the place vniuersal of Rest, whereunto the motions and positions of all inferiour spheres are to be compared. For albeit sundry Astrologians findinge alteration in the declination and Longitude of starres, haue thought that the same also shoulde haue his motion peculiare: Yet Copernicus by the motions of the earth salueth al, and vtterly cutteth of the ninth and tenth spheres, whyche contrarye to all sence the mayntayners of the earthes stability haue bin compelled to imagine.

The first of the moueable Orbes is that of ♄, whiche beinge of all other next vnto that infinite Orbe immoueable garnished with lights innumerable is also in his course most slow, & once only in thirty yeares palleth his Periode.

The second is ♃, who in. 12. yeares perfourmeth his circuit.

Mars in. 2. yeares runneth his circulare race.

Then followeth the great Orbe wherein the globe of mortalitye inclosed in the Moones Orbe as an Epicicle and holdynge the earth as a Centre by his owne waight restinge alway permanente, in the middest of the ayre is carped rounde once in a yeare.

In the fift place is ☿ makinge her reuolution in. 9. moneths.

In the. 6. is ♀ who palleth his circute in. 80. dayes

In the myddest of all is the Sunne.

For in so stately a temple as this who woulde desyre to set hys lampe in any other better or more conuenient place then thys, from whence vnfoormely it might dystribute light to al, for not vnfitly it is of some called the lampe or lighte of the worlde, of others the mynde, of others the Ruler of the worlde.

Aduius numeros & dij moueantur & Orbes
Accipiant leges præscriptaq; fœdera seruent.

g Trismegistus calleth hym the visible god. Thus doth the Sun like a king sitting in his throne gouern his courte of inferi-

oure

our powers: Neither is ☽ Earthe defrauded of the ſeruice of ☽ Moone, but as Ariſtotle ſaith of all other the Moone with the earth hath nigheſt alliance, ſo heere are they matched accordingely.

In this fourme of Frame may we behould ſutch a wonderful Symetry of motions and ſituations, as in no other can bee propoped: The times whereby we the Inhabitauntes of the earth are directed, are conſtituted by the reuolutions of the earth. ☽ circulation of her Centre cauſeth the yeare. the conuerſion of her circumference maketh the naturall day, and the reuolutiõ of the ☾ produceth the monethe. By the onelye vieme of thys Theoricke the cauſe & reaſon is apparante why in ♃ the progreſſions and Retrogradations are greater then in ♄, and leſſe then in ♂, why alſo in ♀ they are more then in ☿. And why ſutch chandges from Direct to Retrograde Stationarie. &c. happeneth notwithſtandinge more rifely in ♄ then in ♃ & yet more rarely in ♂, why in ♀ not ſo cõmonly as in ☿. Alſo whye ♄ ♃ and ♂ are nigher the earth in their Acronicall then in their Coſmicall or Heliacall ryſinge. Eſpecially ♂ who riſing at the Sunne ſet, ſheweth in his ruddy fiery coollour equall in quantity with Iupiter, and contrarywiſe ſetting little after the Sunne, is ſcarcely to be diſcerned from a Starre of the ſecounde light. All whiche alterations apparantlye folowe vppon the Earthes motion. And that none of theſe do happen in the fixed ſtarres, yt playnly argueth their huge diſtance and inmẽſurable Altitude, in reſpect whereof this great Orbe wherein the earth is carryed is but a poyncte, and vtterly without ſenſible proportion beinge compared to that heauen. For as it is in perſpective demonſtrate. Euery quantity hath a certaine proportionable diſtance whereunto yt may be diſcerned, and beyond the ſame it may not be ſeene, this diſtance therefore of that inmoueable heauen is ſo exceadinge great, that the whole Orbis magnus banisheth awaye, yf it be conferred to that heauen.

Heerein can wee neuer ſufficiently admire thys wonderfull & incomprehenſible huge frame of goddes woorke proponed to our ſenſes, ſeinge fyrſt thys baull of ☽ earth wherein we moue, to the common ſorte ſeemeth greate, and te yn reſpecte of the Moones Orbe is very ſmall, but compared with Orbis mag-

nus

nus wherein it is caried, it scarcely retayneth any sensible proportion, so merueilously is that Orbe of Annuall motion greater then this litle darcke starre wherein we liue. But that Orbis magnus beinge as is before declared but as a poynct in respect of the immēsity of that immoueable heauen, we may castly consider what litle portion of gods frame, our Elementare corruptible worlde is, but neuer sufficiently be able to admire the immensity of the Rest. Especially of that fixed Orbe garnished with lightes innumerable and reachinge vp in Sphæricall altitude without ende. Of whiche lightes Celestiall it is to bee thoughte that we onely behoulde sutch as are in the inferioure partes of the same Orbe, and as they are hygher, so seeme they of lesse and lesser quantity, euen tyll our sighte beinge not able farder to reache or conceyue, the greatest part rest by reason of their wonderfull distance inuisible vnto vs. And this may wel be thought of vs to be the gloriouse court of ẏ great god, whose vnsercheable worcks inuisible we may partly by these his visible cōiecture, to whose infinit power and maiesty such an infinit place surmountinge all other both in quantity and quality only is conueniente. But because the world hath so longe a tyme bin carryed with an opinion of the earths stabilitye, as the contrary cannot but be nowe very imperswasidle, I haue thought good out of Copernicus also to geue a taste of the reasons philosophicall alledged for the earthes stabilitye, and their solutions, that sutch as are not able with Geometricall eyes to beehoulde the secrete perfection of Copernicus Theoricke, maye yet by these familiar, naturall reasons be induced to serche farther, and not rashly to condempne for phantasticall, so auncient doctrine reuiued, and by Copernicus so demonstratiuely approued.

VVhat reasons moued Aristotle and others that folovved him to thincke the earth to rest immoueable as a Centre to the vvhole vvorlde.

The moste effectuall reasons that they produce to proue the earthes stability in the middle or lowest part of the world, is

that of Grauitye and Leuitye. For of all other the Elemente of the earth say they is moste heauy, and all ponderous thinges are carryed vnto it, strayninge as it were to sway euen downe to the inmoste parte thereof. For the earth beinge rounde into the which all waighty thinges on euery side fall, makinge ryghte angles on the superficies, muste neades if they were not stayde on the superficies passe to the Center, seinge euery right line þ falleth perpendicularly vpon the Horizon in that place where it toucheth the earth muste neades passe by the Centre. And those thinges that are carried towarde that Medium, it is likely that there also they woulde reste. So muche therefore, the rather shall the Earth rest in the middle, and (receyuinge all thinges into yt selfe that fall) by hys owne waygh te shall be moste immoueable: Agayne they seeke to proue it by reason of motion and his nature, for of one and the same a simple body the motion must also be simple saith Aristotle. Of simple motions there are two kyndes right and circulare, Right are either vp or downe: so that euery simple motion is eyther downewarde towarde the Center, or vpwarde from the Center, or circular about the Centre. Nowe vnto the earth and water in respect of their waight the motion downewarde is conuenient to seeke the Center. To ayre and fyer in regarde of their lightnes, vpwarde and from the Center. So is it meete to these elementes to attribute the right or streyghte motion, and to the heauens only it is proper circularly aboute this meane or Center to be turned rownde. Thus much Aristotle. Yf therefore saith Ptolomy of Alexandria the earth should turne but only by þ dayly motion, thinges quite contrary to these should happen. For his motion should be moste swift and violent that in. 24. howres should let passe the whole circuite of the earth, and those things whiche by sodaine twyninge are stirred, are altogether vnmeete to collecte, but rather to disperse thinges vnited, oneles they shoulde by some firme fastninge be kept together. And longe ere this the Earthe beinge dissolued in peeces should haue been scattered throughout þ heauens, which were a mockery to thincke of, and muche more beastes and all other waights that are lose could not remayne vnshaken. And also thinges fallinge should not light on the places perpendiculare vnder theym, neyther

should

shoulde they fall directly thereto, the same beinge violentlye in the meane carryed awaye. Cloudes also and other thynges hanginge in the ayre shoulde alwayes seeme to vs to bee carried towarde the West.

The Solution of these Reasons with their insufficiencye.

THese are ỳ causes and such other wherwith they approue ỳ Earthe to reste in the middle of the worlde and that out of all question: But hee that will maintayne the Earthes mobility may say that this motion is not violent but naturall. And these thinges whyche are naturally mooued haue effectes contrary to such as are violentlye carried. For suche motions wherein force and vyolence is vsed, muste needes bee dissolued and cannot be of longe continuance, but those which by nature are caused, remayne stil in their perfit estate and are conserued and kepte in their moste excellent constitution. Without cause therefore did Ptolomey feare least the Earth and all earthelye thynges shoulde bee torne in peeces by thys reuolution of the Earthe caused by the woorkinge of nature, whose operations are farre different from those of Arte or suche as humayne intelligence may reache vnto. But whye shoulde hee not mutch more thincke and misdoughte the same of the worlde, whose motion muste of necessity be so mutche more swift and vehemente then this of the Earth, as the Heauen is greater then ỳ Earth. Is therefore the Heauen made so hugge in quantitye that yt might wyth vnspeakeable vehemencye of motion bee seuered from the Centre, least happily restinge it should fall, as some Philosophers haue affirmed: Surelye yf this reason should take place, the Magnitude of the Heauen shoulde infinitely extende. For the more this motion shoulde violentlye bee carryed higher, the greater should the swiftnes be, by reason of the increasing of the circumferẽce which must of necessity in 24. houers bee paste ouer, and in lyke maner by increase of the motion the Magnitude muste also necessarilye bee augmented. Thus shoulde the swiftnes increase the Magnitude and the Magnitude the swiftnes infinitely: But according to that grounde of

nature whatsoeuer is infinite canne neuer be passed ouer. The Heauen therefore of necessity must stande and rest fixed. But say they without the Heauen there is no body, no place, no emptynes, no not any thinge at all whether heauen should or could farther extende. But this surelye is verye straunge that nothinge shoulde haue suche efficiente power to restrayne some thinge the same hauinge a very essence and beinge. Yet yf wee would thus confesse that the Heauen were indeede infinite vpwarde, and onely fynyte downewarde in respecte of his spherical concauitye, Muche more perhappes might that sayinge be verified, that without the Heauen is nothinge, seeinge euerye thinge in respect of the infinitenes thereof had place sufficient within ꝑ same. But then must it of necessity remaine immoueable. For the cheefest reason that hath moued some to thincke the Heauen limited was Motion, whiche they thoughte without controuersie to bee in deede in it. But whether the worlde haue his bounds or bee in deede infinite and without bounds, let vs leaue that to be discussed of Philosophers, sure we are ꝑ the Earthe is not infinite but hath a circumference lymitted, seinge therefore all Philosophers consent that lymitted bodyes maye haue Motion, and infinyte cannot haue anye. Whye dwe we yet stagger to confesse motion in the Earth beinge most agreeable to hys forme and nature, whose bounds also and circumference wee knowe, rather then to imagyne that the whole world should sway and turne, whose ende we know not, ne possibly can of any mortall man be knowne. And therefore the true Motion in deede to be in the Earth, and the apparāce only in the Heauen. And that these apparances are no otherwise then yf the Virgilian Æneas shoulde say.

Prouehimur portu, terræq; vrbesq; recedunt.

FOr a shippe carryed in a smothe Sea with suche tranquilitye doth passe away, that al thinges on the shores and the Seas to the sayers seeme to moue and themselues onely quietly to rest with all suche thinges as are about them. so surely may it bee in the Earth whose Motion beinge naturall and not forcible

cible of all other is most vniforme and vnperceaueable, where-by too vs that saple therein the whole worlde maye seeme too roull about. But what shall wee then saye of Cloudes and other thinges hanginge or restinge in the ayre or tendinge vpward, but that not only the Earth and Sea makinge one globe but also no small part of the ayre is likewyse circularly carried and in like sort all suche thinges as are derived from them or haue any maner of aliance with them. Either for that the lower Region of the ayre beinge mixte with Earthlye and watrye vapours folowe the same nature of the Earth. Eyther that it be gayned and gotten from the Earth by reason of Vicinity or Contiguity. Whiche if any man mervayle at, let him consider howe the olde Philosophers did yeelde the same reason for the revolution of the highest Region of the ayre, wherein we may sometime behoulde Comets carryed circularly no otherwise then the bodies Celestial seeme to be, and yet hath that Region of the ayre lesse conuenience with the Orbes Celestiall, then this lower part with the earthe. But we affyrme that parte of the aire in respect of his great distance to be destitute of this Motion Terrestriall, and that this part of the ayre that is next to the Earthe vooth appeare moste still and quiet by reason of hys vniforme naturall accompanyinge of the Earth, and lykewyse thinges that hange therein, onelesse by windes or other violent accident they be tolled to and fro. For the wynde in the ayre, is nothinge els but as the waue in the Sea: And of thinges ascendinge and descendinge in respect of the worlde we must confesse them to haue a mixt motion of right & circulare, albeit it seeme to vs right & streight. No otherwise then if in a shippe vnder saple a man should softly let a plūmet downe from the toppe alonge by the maste euen to the decke: This plummet passing alwayes by the streight maste, seemeth also too fall in a righte line, but beinge by discours of reason wayed his Motion is found mixt of right and circulare. For suche thinges as naturally fall vouneward beinge of earthly nature there is no doubt but as parres they retayne the nature of the whole. No otherwise is it of these thinges that by fiery force are carried vpward. For the earthly fyer is cheefly noorished wyth earthly matter, and flame is deffined to be nought els but a burninge fume or

ſmoke and the propertye of fyer is to extende the ſubiect where-
unto it entereth, the whiche it doth with ſo greate violence as
by no meanes or engines it cannot be conſtrayned but that with
breache of bandes it will perfourme his nature. This motion
extenſiue is from the Centre to the circumference, ſo that if a-
ny earthly part be fiered, it is carryed violently vpward. There
fore whereas they ſay that of ſimple bodyes the motion is alto-
gether ſimple, of the circulare it is chefely verified, ſo longe as
the ſimple bodye remayneth in his naturall place and perfit v-
nity of compoſition, for in the ſame place there can bee no other
motion but circulare, whiche remaynynge wholye in it ſelfe is
moſt like to reſt and immobility. But right or ſtreight motion
only happen to thoſe thinges that ſtray and wander or by anye
meanes are thruſt out of their natural place. But nothing can
bee more Repugnaunte to the fourme and Ordinance of the
world, then that thinges naturally ſhould be out of their natu-
rall place. This kinde of motion therefore that is by right line
is only accident to thoſe things that are not in their right ſtate
or perfection naturall, while partes are diſioyned from their
whole bodie, and covet to retourne to the vnity thereof againe.
Neither do theſe thinges which are carryed vpwarde or dow-
warde beſides this circular mouinge make anye ſimple, vni-
forme, or equall motion, for with their leuity or ponderoſitye
of their body they cannot be tempered but alwaies as they fall
(beginninge ſlowly) they increaſe their motion, and the farder
more ſwiftly, whereas contrariwiſe this our earthly fier (for o-
ther wee cannot ſee) we may behould as it is carryed vpwarde
to vaniſh and decay as it were confeſſinge the cauſe of violence
to proceede only from his matter Terreſtriall. The circulare
motion alwaye contynueth vnyforme and equall by reaſon of
his cauſe whiche is indeficient and alway continuinge. But the
other haſteneth to ende and to attayne that place where they
leaue lenger to be heupe or lighte, and hauinge attayned that
place, theyr motion ceaſeth. Seinge therefore this circulare
motion is proper to the whole as ſtreighte is only vnto partes,
we may ſay that circulare doth reſt with ſtreighte as Animall
cum Aegro. And whereas Ariſtotle hath diſtributed Sim-
plicem motum into theſe thre kyndes A medio. ad medium,

and

and Circa medium, it must be onely in reason and imagination, as wee lik wise seuer in consideration Geometricall a poincte, a line, and a superficies, whereas in deede neither can stand without other, ne any of them without a bodye.

Heereto wee may adioyne that the condition of immobilitye is more noble and diuine then ỳ of chaunge, alteration, or instabilitye, & therefore more agreeable to Heauen then to this Earth where al thinges are subiect to continual mutability. And seeinge by euident proofe of Geometricall mensuration wee finde that the Planets are sometimes nigher to vs and sometimes more remote, and that therefore euen the mainteyners of the Earthes stability are enforced to confesse that the Earth is not their Orbes Centre, this motion Circa medium must in more generall sort bee taken and that it maie bee vnderstaude that euery Orbe hath his peculiare Medium and Centre, in regarde whereof this simple and vniforme motion is to bee considered. Seinge therefore that these Orbes haue seuerall Centres, it may be doughted whether the Centre of this earthly Grauity be also the Centre of the worlde. For Grauity is nothinge els but acertaine proclinitye or naturall couetinge of partes to be coupled with the whole, whiche by diuine prouidence of the Creator of al is giuen & impressed into the parts, ỳ they shou'd restore themselues into their vnity and integritie concurringe in sphericall fourme, which kinde of propriety or affection it is likelye also that the Moone and other glorious bodyes waute not to knit & combine their partes together, and to mainteyne them in their round shape, which bodies notwithstandinge are by sundrye motions, sundrye wayes conueighed. Thus as it is apparant by these natural reasons ỳ the mobility of the Earth is more probable and likelye then the stabilitye. So if it bee Mathematically considered and wyth Geometricall Mensurations euery part of euery Theoricke examined: the discreet Student shall fynde that Copernicus not without greate reason did propone this grounde of the Earthes Mobility.

A short Discourse touchinge the Variation of the compasse.

Heruete

MEruelous no doubte is that naturall proprietye of the Magnes whereby the nædle touched immediatly to urneth to some one certaine poinct of the Heauens, and after sundry motions hither and thyther fyndeth rest onelye in one place and poincte. And albeit this poinct in seuerall Horizons bee differente, yet in any one Horizon it remayneth alway permanent, and therefore it plainely appeereth that the same proceedeth of some constant permanent cause naturall, and not of any mutable vncertaine cause accidentall. But what this cause should be, no man hitherto hath truelye discouered. To omit apparant absurd opynions the moste probable of those that haue bene gyuen and generally beste allowed is the Poinct Attractiue, whiche should be of suche vertue as to drawe the needle touched alway toward the same poinct, but whether this poinct should bee in the Heauens or Earthe is an other controuersie. Suche as will haue it in the Earthe affyrme yt to be a huge mountayne or rocke of Magnes stone, distant from the Pole certaine grades, whyche drawinge the nædle to it selfe alwayes causeth it to make an angle of Variation from the Pole of the worlde saue onely vnder the Meridiane that passeth by the same Attractiue poyncte. But the errour of this opinion will soone bee solude of them that shall vpō this supposition and two different angles of variation searche owt the place of that Poynct Attractiue (the same beinge in the Intersection of the two circles of positiō by the variations determined) and then conferre that with some thirde angle of variation: whereby it shall plainly appeere that in the Earthe no suche one Attractiue poynct can be imagined, as shall by circle of position produce suche variations as in Nauigation haue bin discouered. And to place this Poynct Attractiue in any of the Heauens, it woulde appeere more absurde for whether the Heauens moue and the Earthe rest immoueable, or the Earth moue and the great Orbe of starres be permanent, as of necessity the one or the other must bee true (considerynge a motion is apparant) it must necessarily folowe that this alteration shoulde bee in continuall alteration euerye howre and moment of the day, but by experience wee fynde the contrarye, and therefore may necessarily be inferred, no suche Attractiue

Poynct

Poinct in that Heauen. So that hauinge fownde by these tryalls this imagination of a Poynct Attractiue and suche instrumentes as haue bin vppon that grounde deuised but meere vanities, I haue somewhat farther soughte, and amonge sundry ymaginations that I haue Mathematically handled, I thinck it not amisse to propone one, to be cõsidered, wayed & examined by exquisite tryall of Geometricall Demonstration and Arithmeticall Calculation, for it is no question for grosse mariners to meddle with, no more then the fyndinge of the Longitude. And therefore I cannot a litle woonder at the blinde bouldnes of Sebastiane Cabotto. and some others, that beinge ignorante both in Geometricall demonstration and Arithmeticall Symicall Calculations haue natheless tane vppon theym in theese most difficile questions to promise resolution, beinge no more able or likely to perfourme it then an Oxe to flie betwene two Mountayne Toppes. Those sycences beynge the onelye wynges to eleuate oure grosse senses to matters so highe and mistical. Let suche content themselues with the praise of painfull, harde, farre trauelled mariners, and for their neewe dyscouerye let theym haue due praise and commendation, but with all let them learne Appelles lesson Ne Sutor Vltra Crepidam. Of those two Problemes thus muche I promise for the inuention of the Longitude I wyll god sparinge lyfe deliuer meanes as exacte certaine and feazible at all tymes of the yeare in what place soeuer as by Eclipses. And for the other if I deliuer not the like, at the least so farre I will wade therein, that suche blinde bouldnesse knowinge somewhat more theyr owne imperfection shall in suche mysterye vse more modestye.

An Hypothesis or supposed cawse of the variation of the cumpasse to be Mathematically wayed.

AS the Axis of the Earthe notwithstandinge all other motions remayneth as it were immoueable and yet in respecte of the sphericall fourme of the Earth in euery seuerall Horizon maketh a seuerall

line

line Meridionall by reason of the section made in superficies of the Horizons by Meridians hauinge all that Axis as their common diameter, so may it also come to passe of the line of the nædle and hys variation, the nædle beinge alwaye permanent in one plaine superficies accordinge to the seuerall section of ꝑ plaine wherein it resteth, and the Horizon there may continually be made in euery playne newe variations. More playnlye to open this imagination thus I say, that as in a payre of ballance of equall weyghte there is a certayne motion too and fro before they find their true place of rest (the same beinge only in the leaell of the Horizon) whiche cõmeth to passe as Copernicus affirmeth by the Attractiue Centre of the Earth who drawinge vnto him either waight with like force findinge the subiects like also, compelleth them to rest in the superficies like distant from that Attractiue center, So in the nædle beinge a body endued with two seuerall propꝛieties the one of Grauitye & Leuitye whyche beinge equally peyzed, forceth hym to abyde in the Horizon, the other beinge Magneticall and receiued by the touche which causeth him to rest alway in that one Meridiane, to the Magnes appꝛopꝛiate, ye thereby cõmeth to passe that after sundꝛy balancinge this way and that way it onlye setleth in the commune section of his peculiare Meridiane and the Horizon. So that euen as in Dialles the line of the stile only accordeth and concurreth with the Meridiane line in such as are voide of declination, but in all such Playnes as are declinatorye the line of the stile varieth from the Meridiane line, and the same angle of variation also altereth aswell in respect of Inclination as Declination, so suppose I this variation of the Cũpasse to be nothinge els but the angle compꝛehended betweene the Meridiane line and the common section of the magneticall meridiane and the Horizon in the Horizontall Playne, and this angle to be alwayes exactly equall to the angle conteyned of the Meridiane line, and line of the stile, the Longitude of the place pꝛoponed accounted from the magneticall Meridiane beinge equall to the declination of the Dialls, Plaine superficies (makinge computation from South to East circularly and the Latitude of the place equall to the complement of the Inclination of the same superficies Horologiall. Of the verity of thys

Suppose,

Suppoſition I could eaſily determine if there were any truſte to be obſeruation of mariners, but hauinge found by experience their groſſe vſage and homelye inſtrumentes, where halfe a point commonly breakes no square, and alſo their repugnaunt tales that haue trauelled the ſelf ſame voyadges I cannot yet reſolue.

VPpon due examination of this Hypotheſis there may happily fall out a ſtraunge Paradoxe not thought of hitherto, that theſe vulgare marine Chartes delineate with Parallele meridianes and rightelined Rumby beinge of themſelues apparantly fauls, and erroneouſe, yet vſed without rectification of the compaſſe may bringe forth true effects, and ſo twoo errours concurringe produce a verity.

Errors in the Arte of Nauigation commonly practized.

FIrſte all their Chartes are deſcribed with ſtreyghte Meridiane lynes runninge equidiſtante of Parallele which error is moſt manyfeſt to anye that hath caſte but the ſyghte Principles of Coſmographye conſideringe they are all great cyrcles & concur in the Poles.

SEcondly they ſuppoſe that runninge vpon anye of their poyntes of their compaſſe they ſhould paſſe in the circumference of a greate circle and therefore in the playne Chartes deſcribe thoſe wyndes with ſtreyghte lines, but therein are they greatly abuſed, for the ſhippe ſeekinge the North and the South onelye maketh her courſe in a great circle, Eaſt or VVeſt ſhee deſcribeth a Parallele, and beinge ſayled on anye other meane poynt (the compaſſe beinge truelye touched) ſhee beareth in her courſe a curue of Helicall kinde, neither ſtraight nor circulare, but myxte of both, and therefore to ſet forth theſe wyndes in the Chartes with ſtreight lines is moſt erroneous.

THirdly theyr rule to knowe the Latitude by the Pole starre adding or subtractinge from his Altitude accordinge to the situation of the Guardes, is also false, and that woorst is cannot be amended, but be it neuer so well rectified to one Clymate yet is it faulse, in all other.

FOurthly theyr taking of the Sunne with their Balestile (as they terme it) is most faulse, and whereas some findinge the errour thereof haue gone about to remedy the same by cutting of a parte at the ende thinckinge thereby it might approche to the Centre of the eye, they increase thereby the error, and make it more faulse. For *visus non fit à puncto* as they suppose. And this errour is mutch lyke the other of the Pole starre and situation of the Guardes for be it neuer so well corrected by section to any one Altitude then shall it be faulse for all other, as to any skilfull in Perspectiue it is easily demonstrate.

This Errour I haue alredye refoormed demonstratiuè & practicè in my booke lately published entituled *Alæ seu Scalæ Mathematicæ.*

¶ Also the Rules they haue to knowe howe manye leagues they shall ronne vppon euery poinct to raize one degree in latitude, are also meere faulse. For they serch that Arck Itinerall as though it were the Hypothenusa to a righte angled tryangle whose sides are circles of contrary nature, the one à Parallele the other a great circle, and therefore without all sense seke they by proportion of right lynes, to deliuer their quantitie.

But besydes these errours they haue one great imperfection yet in their arte, and hitherto by no man supplyed, and that is the maute of exact rules to knowe the Longitude or Arckes Itinerall East and VVest, without the which they can neither truely geeue the place or situation of any Coaste, Harberough, Rode or Towne, ne yet in saylinge discerne how the place they saile vnto beareth from them, or how farre it is distant, whereby they are enforced longe before they come at anye Coaste all night to stryke sayle, no other wairs then if they were vppon it,

thereby

thereby losinge the benefit of prosperous windes, in suteh sorte sometime, that whereas kepinge a true course they mighte haue bin quietlye at Roade, they are by contrarye and aduerse tempestes caryed farre of, and so not without great charge to the owner, payne to the companye, and perill to the vessell, are enforced to wast theyr time. Which groweth of their ignorãce, that they neyther haue true Rules too direct theymselues, the nighest course, ne yet treadinge their beaten pathes can assuredlye decide of theyr certayne place. For reformation of these errours and imperfections, newe Chartes, newe Instruments and newe Rules muste bee prescribed. Wherein I haue prepared in a peculiare volume for that purpose to entreate, wyshinge in the meane time that suteh as are not able to refourme these faultes, wyll abstayne to teach our Coũtrye men moe Errours.

IMPRINTED AT
London by Thomas
Marshe.
1576.